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# J I M A

**JOURNAL *of the* INDIAN MEDICAL ASSOCIATION**

**Official Publication of the Indian Medical Association  
Indexed in Index Medicus**

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**Volume 117 ♦ Number 09 ♦ September 2019 ♦ Kolkata**

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**ISSN 0019-5847**



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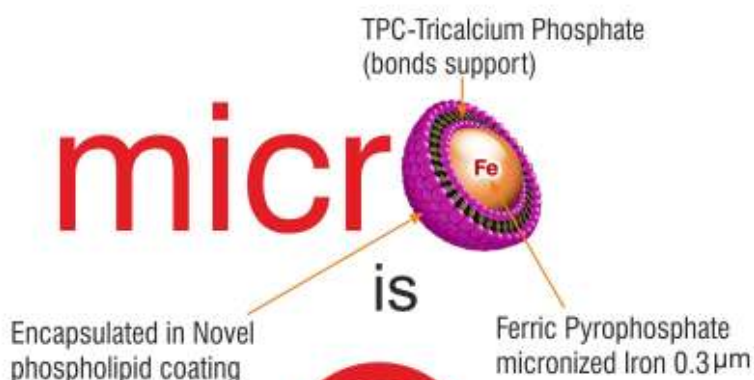
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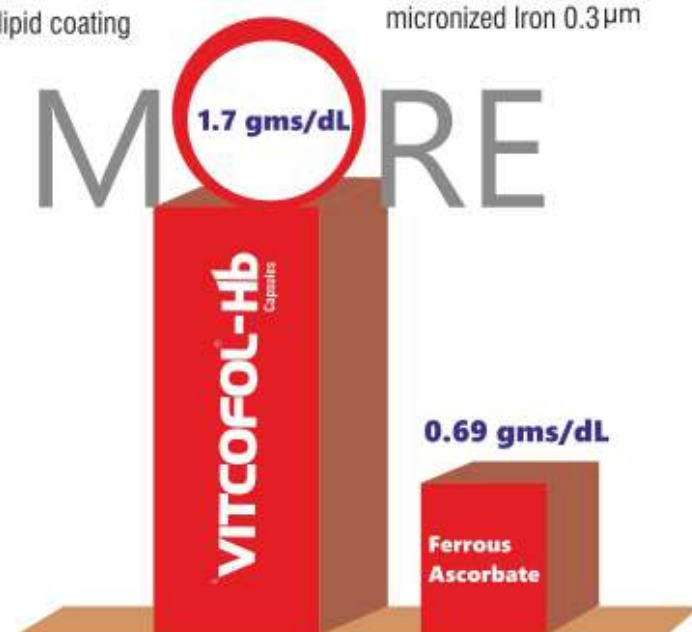
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1. Indian Journal of Obstetrics and Gynaecology Research 2015;2(3):155-158



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**Volume 117 • Number 09 • Kolkata • September 2019**

**ISSN 0019-5847**

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## Editorial

### Osteoporosis



**Dr Golokbihari Maji**

**MS (Ortho)**

*Hony Editor, Journal of IMA (JIMA)*

**O**steoporosis is a bone disease that occurs when body loses too much bone, makes too little bone, or both. As a result, bones become weak and may break even from a trivial fall.

The declared osteoporosis decate throughout the world is past 09 years back. The problem remaining same due the lack of awareness among the people and among doctors too is as before, though a beit lesser. Increase of the life expectancy, addiction to spiecy and jung foods, smoking, and alcholah intake, lack of cacium rich diet, lack of Vit D and other minerals in the body are leading to osteoporosis even at this moment when people are some how concious of the problem.

I consider the condition not as disease, but a the change of age and reluctance to the diet habit and life style, because a concious person can take care of his own with minimum effort by changing his life style and diet habit.

#### **Causes and risk factors :**

There are several identical risk factor for osteoporosis of which some are modifiable but it is not possible to avoid others. Body continually absorbs old bone and generates new bones to maintain bone density, strength and structural integrity of the bones.

Bone density peaks when a person is in his late 20's and weakened at about 35 years of age. As a person grows older bone break down faster than it rebuilds. Osteoporosis, may develop if the breakdown occurs excessively. It can affect bone of male and female, but it is most likely to occur in women after menopause because of the sudden decrease in estrogen. Estrogen normally protects women against osteoporosis. It is seen that once the people reach 50 years of age 1 in 3 women and 1 in 5 men will experience fracture due to osteoporosis.

#### **Unavoidable factors :**

In general unavoidable factors include : —

(i) **Age :** Risk increases after the age of mid 30s and specially after menopause.

(ii) **Reduced sex hormones :** Lower estrogen level appears to make it harder to bone to regenerate.

**Ethnicity :** White people and Arian people have higher risk than other ethnic group.

**Height and weight :** Being over 5 feet, 2 inches tall and weighing under 120 pound increase the risks.

**Genetic factors :** Having a closed family members with a diagnosis of his fractures on osteoporosis, makes osteoporosis likely.

**Fracture history :** A person over fifty years of age with previous fracture after a low level injury is likely to receive a diagnosis of osteoporosis.

#### **Modified risk factors include : (i) Inactivity (ii) Immobility**

Weight bearing exercises helps prevent osteoporosis. It places controlled stress on the bone, which encourages bone growth. In people with osteoporosis, the bone become porous, and weaker, increasing the risk fractures, specially in the hip, spinal vertebrae and some peripheral joints suck as the wrists.

#### **Signs and symptoms :**

Osteoporosis develops slowly; a person my not know they have it until they experience a fracture of break after a minor incident such as trivial fall. Even caught or sneeze can cause a break in osteoporosis bone. Breaks will occur in hip, wrist or the spinal vertebrae for the people who are osteoporosis. If break occur in spinal vertebrae, it can lead to change in posture, a stoop, and curvature of the spine. People might also notice a decrease in height or their cloths might not fit as well did previously.

#### **INVESTIGATION**

**BMD : Bone mineral density test** — Bone mineral density test uses x-rays to measure the amount of calcium in bones. This test in important for people who are of risk for osteoporosis, specially women and older adults. The test in also referred to a dual x-ray obsorptiometry (DXA). BMD in a measure of bone density, respecting the strength of bone represented by calcium content. The BMD test detects osteopenia (mild bone loss, usually with no symptoms) and osteoporosis (more severe bone loss, which may cause symptoms). According to WHO : A T score 1.0 or above is normal bone density. A T score between – 1.0 and -2.5 means osteopeosia. – 2.5 or lower means osteoporosis with or without fracture.

#### **TREATMENT**

##### **Treatment aims to —**

- Slow or prevent the development of osteoporosis.
- Prevent fractures.
- Maintain healthy bone mineral density and bone mass.
- Reduce pain.

People at risk of osteoporosis and fractures can use preventive lifestyle measures, suppliments, and certain medication to active these goals.

##### **Drugs that can help, prevent, and treat osteoporosis include :**

- (1) **Bisphosphonates** — There are antiresopptive drugs that slow bone loss and reduces a person's fracture risk.
- (2) **Estrogen agonists or antagonists** — Doctors also call these selective estrogen receptor modulators. Raloxifene is one example. These can reduce the risk of spine fracture in women following menopause.



- (3) **Calcitonin** — This helps prevent spinal fractures in post menopausal women and can help manage pain after a fracture.
- (4) **Parathyroid hormone, such as teriparatide** — US food and Drugs administration (FDA) has approved this hormone for treating people with a high risk of fracture as it stimulates bone formation.
- (5) **Monoclonal Antibodies** — These are immune therapies that some people with osteoporosis take after menopause.
- (6) Doctors may use stem cell therapy to treat osteoporosis in future. In 2016, researchers found that injecting a particular type of stemcell into mice reversed osteoporosis and bone loss in a way that could also benefit humans.

#### **Other new medications :**

**Denosumab** — It is a newer medication shown to reduce the risk of osteoporotic fracture in women and men. Unrelated to bisphosphonate denosumab might be used in people who cannot tolerate bisphosphonate, such as with reduced kidney function. Zoledronic acid also known as Zoledronate is a medication used to treat a number of bone diseases, like osteoporosis, high blood calcium due to cancer, bone break down due to cancer and Paget's disease of bone. It is given by injection in the vein.

Scientists believe that genetic factors strongly determine bone density. Researchers are investigating which gene is responsible for bone formation and loss in the hope that this might alter new osteoporotic treatment in future.

Some diseases or medications cause changes in hormone levels and some drugs reduces bone mass.

#### **Medical conditions that increase the risk include :**

- (i) Some autoimmune diseases such as rheumatoid arthritis and ankylosing spondylitis.
- (ii) Cushing's syndrome and adrenal gland disorder.
- (iii) Pituitary gland disorders.
- (iv) Hyper thyroidism and hyper parathyroidism.
- (v) A shortage of estrogen and testosterone.
- (vi) Problem with mineral absorption, much as celiac disease.

#### **Medications that raise the risk include :**

- (i) Glucocorticoid and corticosteroid including prednisone and prednisolone
- (ii) Thyroid hormone.
- (iii) Anticoagulant and blood thinners, including heparin and warfarin.
- (iv) Protein pump inhibitors and others antacids that adversely affect mineral status.
- (v) Some antidepressant medications.
- (vi) Some vitamin A medications.
- (vii) Thiazide diuretics.
- (viii) Thiazolidinediones used to treat type 2 diabetes decrease bone formation.
- (ix) Some immune suppression agents, such as cyclosporine which increase both resorption and formation.
- (x) Aromatase inhibitors and other treatments that deplete sex hormones such as anastrozole.

- (xi) Some chemotherapeutic agents, including letrozole, used to treat breast cancer and leuporelin for prostate cancer and other conditions.

#### **PREVENTION**

**Calcium and Vitamin D intake** — Calcium is essential for bone. People should make sure that they consume enough calcium daily. Adults aged 19 years and above should consume 1000 milligram of calcium daily. Women who are over 51 years of age and all adults from 71 years onward should have a daily intake of 1200 mg of calcium daily.

#### **Dietary source of calcium —**

- (i) Dairy food such as milk, cheese and yogurt.
- (ii) Greeny leafy vegetables such as broccoli.
- (iii) Fish with soft bones such as salmon and tuna.
- (iv) Fortified breakfast cereals.

Supplements are an option – Calcium supplements can be purchased from market.

**Vitamin – D** also play a key role in preventing osteoporosis as it helps the body absorb calcium. Dietary sources include fortified food, saltwater fish and liver. However most vitamin D does not come from food but from sun exposure, so moderate and regular sunlight exposure is recommended.

#### **LIFE STYLE FACTORS**

#### **Other ways to minimise the risk are —**

- (i) Avoidance of smoking – as this can reduce the bone growth and decrease estrogen level in women.
- (ii) To stop or to limit alcohol intake to encourage healthy bone and to prevent falls.
- (iii) Getting regular weight bearing exercises such as walking as this promotes healthy bones and strengthens their support from muscles.
- (iv) Exercises to promote flexibility and balances, such as yoga, which can reduce the risk of fall and fracture.

The people who already have osteoporosis, nutrition, exercise and fall prevention techniques play a key role in reducing the risk of fracture and the rate of bone loss.

#### **FALL PREVENTION**

#### **Tip for fall prevention include —**

- (i) Removing the hazards, such as throw rugs and clutter.
- (ii) Having regular vision screening and keeping eyewear upto date.
- (iii) Installing grab bars as for example in the bathroom.
- (iv) Ensuring that there is plenty of light in the home.
- (v) Practicing exercise that helps with balance.
- (vi) Asking doctors to review medications to reduce the risk of dizziness.

#### **OSTEOPENIA**

It is the midpoint between the normal healthy bone and osteoporosis. Osteopenia is when the bones are weaker than normal but not so far gone that they break easily, which is the hall mark of osteoporosis.

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## Original Article

# Comparison between free limbal based conjunctival autograft and anchored conjunctival rotational flap in primary pterygium surgery in adults; a randomised controlled trial in a tertiary care hospital in North-East part of India

Soumyadeep Majumdar<sup>1</sup>, K P Baidya<sup>2</sup>

Pterygium is a benign or noncancerous fibro-vascular growth in conjunctiva which covers part of the cornea and it is not very uncommon in a tropical country like India. Cosmetic and visual problem along with recurrent inflammation are the common chief complaints. Different surgical procedures were compared to reduce its recurrence. In this prospective single blinded randomised controlled trial (with parallel group design), 52 patients (M:F=32:20) with primary progressive pterygium (using inclusion and exclusion criteria) attending ophthalmology outpatient department in North Bengal Medical College were randomized applying appropriate computer generated randomization sequence. Limbal Based Conjunctival Autograft technique and Anchored Conjunctival Rotational Flap technique were performed by single experienced surgeon in the two groups and the outcome was assessed by the same surgeon at regular prefixed intervals upto 18 months. Graft oedema and granuloma formation were significantly reduced in the anchored rotational flap group than limbal based conjunctival autograft group. Though recurrences were more in number in case of anchored flap technique (03.80% to 07.70%) but no statistically significant differences noted ( $p=0.50$ ). The newer technique has shown reduced incidence of early postoperative complications and equally effective to reduce recurrence. Time taken for the surgery compared between the two groups through means and t-test which shows statistically significant less time in ACRF group ( $p=0.000$ ).

[J Indian Med Assoc 2019; 117(9): 11-3 & 23]

**Key words :** Pterygium, limbal stem cell, conjunctival autograft, anchored, rotational flap, graft oedema, granuloma, recurrence.

The word pterygium comes from the Greek word “pterygos”, described by Hippocrates, Galen, and others<sup>1</sup> means “wing”, is a common ocular surface disease with multi-factorial association though definite cause is yet to be revealed. Most accepted hypothesis is ultraviolet light induced damage of limbal stem cell<sup>2</sup>. Here the clinical characteristics of pterygium were classified using a modified classification system. The stage (S) of pterygium was rated as stage 1, corneal invasion, 1 mm; stage 2, corneal invasion 1-2 mm; stage 3, corneal invasion 2-3 mm; or stage 4 corneal invasion >3 mm<sup>3</sup>.

Simple pterygium excision by bare sclera technique has been carried out for many years, because it is simple, less skill demanding and quick procedure. However, the recurrence rate of pterygium with the bare sclera technique were very high, up to 80-90%<sup>4</sup>. Different methodologies have been introduced to lower its recurrence, including

conjunctival flap with or without limbal stem cell (sliding, transposition, bridging, mini flap and mini-SLET<sup>5</sup>, anchored-rotational flap<sup>6</sup>) with or without intraoperative or postoperative mitomycin C, cyclosporine application, beta radiation exposure, and amniotic membrane grafts<sup>4,7-9</sup>. The application of fibrin glue, and bevacizumab has also been evaluated<sup>10,11</sup>. However it is very much evident that conjunctivo-limbal autograft is the safe and most cost-effective technique and the recurrences are reduced to a great extent.

In this study we have tried a modified conjunctival auto-graft by rotation of graft anchoring at one point (1 mm diameter). Here after the placement of graft the limbus will not be at the limbus and this procedure is compared with the standard limbal-based conjunctival autograft.

### MATERIALS AND METHODS

Patients with primary progressive pterygium are enrolled in our study using following inclusion and exclusion criteria.

- **Inclusion Criteria :** (1) Patients with unilateral

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primary progressive pterygium involving at least 2 mm from limbus between 20 to 50 years of age. (2) Patients of 20 to 50 years of age with bilateral primary progressive pterygium. The eye having pterygium with more corneal involvement from limbus. If both eye having same corneal involvement from limbus, the eye to be selected according to patient's own choice.

• **Exclusion Criteria :** (1) Very early pterygium, (2) Recurrent pterygium, (3) Patients with active ocular infection, (4) Acute or chronic dacryocystitis, (5) Patients with Previously Diagnosed Diabetes Mellitus, (6) Patients with Previously Diagnosed Bleeding or Clotting disorder, (7) Unwilling patients

The study period was 18 months (February 2015 to August 2016) among which first 3 months – sample selection, counselling, randomization and intervention and next 15 months – follow up were done.

The study variables were 'Graft oedema' (>1 central corneal thickness) and 'granuloma formation' (Foreign body granuloma at sutured site, pyogenic granuloma, Tenon's granuloma) and recurrence which will be determined by regrowth of fibro-vascular conjunctiva more than 1 mm into the cornea<sup>7</sup>.

In this prospective comparative study, 52 patients with primary progressive pterygium (using inclusion and exclusion criteria) will be randomized applying appropriate computer generated randomization sequence. Limbal Based Conjunctival Autograft (LBC Autograft) technique and Anchored Conjunctival Rotational Flap (ACR Flap) technique were performed by single experienced surgeon in the two groups and the outcome was assessed by the same surgeon at regular prefixed intervals.

Following anti-septic dressing and draping topical anaesthetic (pro-paracaine hydrochloride 0.5%) was given. Pterygium mass along with Tenon's fascia (on the adjacent sclera) were excised with crescent knife and conjunctival scissors and a bare sclera area was made. LBC Autograft was taken from superior limbal conjunctival area with the help of Vanna's scissors after measurement of bare sclera area. Graft was taken 0.5 mm larger than measured reading. Graft was placed in the bare area and sutured at

four corners with 8-0 'polyglactin 910' absorbable suture. ACR Flap was taken from adjacent superior conjunctiva (0.5 mm larger than the bare sclera area) but keeping 1 mm area attached (centre of rotation) at limbus in the pterygium side after measuring the bare sclera area. Now the flap is rotated keeping the attached 1 mm area at the centre of rotation, to cover the bare sclera (limbal conjunctiva of the graft will not be on the limbal side after rotation) and sutured at three corners with 8-0 'polyglactin 910' absorbable suture.

Topical antibiotic-steroid (Moxifloxacin hydrochloride 0.5% and Dexamethasone 0.1%) eye drop with artificial tear substitute (0.5% Carboxy-methyl cellulose) were given to all the patients from first postoperative day to two postoperative weeks (Topical antibiotic-steroid eye drop 1 drop QID for 1 week followed by BID in the next week and artificial tear substitute QID for two weeks) in the operated eye.

Then patients of each group will be examined, after surgery, at 1 week, 2 week, 4 week and then monthly upto 16 months (from intervention) by slit-lamp by the same surgeon. Time period for assessment of early complications will be upto 2 months and for recurrence upto 18 months.

**Ethical approval :** The protocol and both the patient information sheet and the consent form were submitted to the Institutional Ethics Committee of NBMCH for approval and the same was taken and Clinical Trial Registry of India (CTRI). (CTRI/2015/02/005533)

**Confidentiality and Anonymity** were maintained.

**Funded : No**

**Statistical analysis :** After collection of data, using Microsoft Excel data sheet and SPSS Version 20 appropriate statistical tests (student –t test and chi-square test) are applied to test the significance and a p value <0.05 is considered significant (Fig 1).

#### OBSERVATION

The pre-operative parameters: few socio-demographic variables eg, age, gender, occupation were compared between two groups along with pterygium size, and the groups were found to be comparable (Tables 1-4).

As graft oedema is a result of graft handling and it depends upon absorption of intra-graft or infra-graft fluid

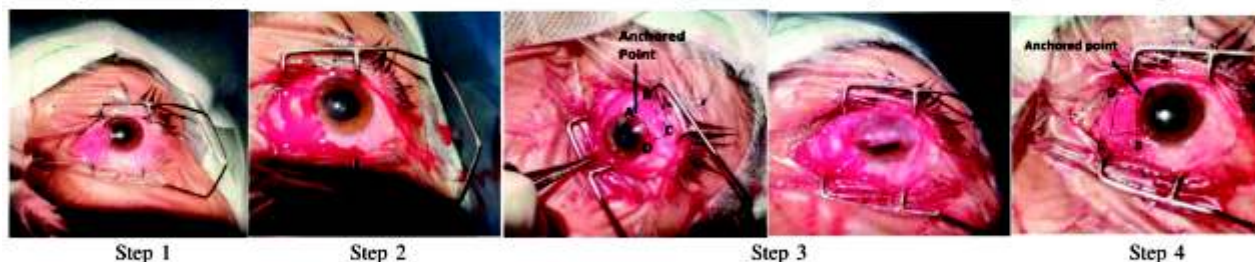


Fig 1 — Anchored conjunctival rotation flap technique [Step 1 : Preparation of pterygium before surgery. Step 2: Blunt dissection of the head and the body of pterygium and cutting of the same to make bare sclera. Step 3: Measurement of the bare area and according to the measurement harvesting of the graft preserving the inferior limbal anchoring point (A) (1 mm). Step 4 : After rotation (point of rotation being the point 'A' suturing of the graft at 3 points (B,C,D)]



after surgery. As the handling of the graft is more in case of LBCA (the graft has to be cut from the superior conjunctiva and lifted up to place it on the bare sclera and then 4 sutures, 1 extra than ACRF technique) and there remains a continuous sub-conjunctival capillary network beneath the anchored part in case of ACRF, the incidence of graft oedema and granuloma are more in the first group though it has no long term effect especially on recurrence (no graft oedema noted in all the recurrence cases). Early

Table 1 — Statistical analysis of pre-operative assessments  
Pre-Operative parameters

	LBC Autograft	ACR Flap
Mean Age (years)	37.65 (±5.351)	37.85 (±5.843) (p=0.902)
Gender	Male 16 (61.5%)	16 (61.5%)
	Female 10 (38.5%)	10 (38.5%) (p=0.612)
Occupation	Farmer 14 (53.8%)	14 (53.8%)
	House Wife 08 (30.8%)	09 (34.6%)
	Tea Garden Worker 04 (15.4%)	03 (11.5%) (p= 0.904)
Mean Pterygium Size (mm)	03.19 (±0.694)	03.19 (±0.694) (p=1.000)

Table 2 — Statistical analysis of early and late post-operative complications  
Postoperative parameters

Incidence of	LBC Autograft	ACR Flap
Graft Oedema	42.3% (n=11)	07.7% (n=2) (p=0.004)
Granuloma	34.6% (n=10)	03.8% (n=1) (p=0.005)
Recurrence	03.8% (n=1)	07.7% (n=2) (p=0.50)

Table 3 — Statistical analysis of recurrence according to stage of pterygium

Stage of pterygium	Recurrence rate
Stage 2	0/8 (0.00%)
Stage 3	0/26 (0.00%)
Stage 4	3/18 (16.7 %) (p = 0.049)

Table 4 — Statistical analysis of time taken for surgery

Pterygium group (n)	Mean	Std. Deviation	Sig. (2-tailed)
LBCA	26 45.731	1.9505	
ACRF	26 35.692	2.3455	0.000

postoperative complications were not observed after 2 months. In ACR Flap group single granuloma was foreign body granuloma at one of the sutured site, but in the other group, six were foreign body granuloma (66.67%), two were pyogenic granuloma (22.22%), and one was Tenon's granuloma (11.11%). Recurrences were observed and noted upto 18 months and it was found that no statistically significant difference between the two procedures. Thorough examination of the cases postoperatively did not reveal any sign suggestive of graft detachment or displacement in either group. Stage 4 pterygium shows statistically significant increase incidence of recurrence (p = 0.049). Time taken for the surgery compared between the two groups through means and t-test which shows statistically significant less time in ACRF group (p=0.000).

## DISCUSSION

To prevent the recurrence of pterygium after surgery different methods are tried. Among them the Conjunctivo-

Author	Comparison between	Results
Araim MA, Yaqub MA, Ameen SS, Iqbal Z, Naqvi AH, Niazi MK (2012)	Amniotic membrane transplantation in primary pterygium compared with bare sclera technique	Recurrence of pterygium in bare sclera technique were 37.5% and in Amniotic membrane transplantation were 12.9% <sup>8</sup> .
Kheirkhah A, Hashemi H, Adelpour M, Nikdel M, Rajabi MB, Behrouz MJ (2012)	Randomized trial of pterygium surgery with mitomycin C application using conjunctival autograft (CAU) versus conjunctival-limbal autograft (CLAU)	No eye in the CLAU group developed pterygium recurrence; however, recurrence was seen in 2 eyes (5.1%) in the CAU group, including 1 of 31 patients (3.2%) with primary pterygium and 1 of 8 patients (12.5%) with recurrent pterygium <sup>9</sup> .
Kim SH, Oh JH, Do JR, Chuck RS, Park CY (2013)	A Comparison of Anchored Conjunctival Rotation Flap and Conjunctival Autograft Techniques in Pterygium Surgery	The recurrence rate was 8.0% in the conjunctival auto-graft group and 8.6% in the anchored conjunctival rotational flap group (P =0.659). Graft oedema was lower for anchored conjunctival rotational flap surgery (14.3% versus 72.0%, P<0.001) <sup>6</sup> .
Majumdar S, Baidya K P (2016)	Comparison Between Free Limbal Based Conjunctival Autograft and Anchored Conjunctival Rotational Flap In Primary Pterygium Surgery In Adults; A Randomised Controlled Trial	Graft oedema-in ACR Flap group 07.70% compared to 42.30% in LBCAutograft group (p=0.004) Granuloma – in ACR Flap group 03.80% compared to 34.60% (p=0.005) Recurrence – 07.70% in ACRFlap group compared to 03.80% in LBCAutograft (p=0.50) Stage 4 pterygium shows recurrences more compared to others irrespective of the surgical procedure done (p=0.049). Time taken for the surgery compared between the two groups through means and t-test which shows statistically significant less time in ACRF group (p=0.000).

(Continued on page 23)



## Original Article

# Relationship of neck circumference with metabolic syndrome

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Metabolic syndrome is a major health problem and there is need for awareness programs and lifestyle interventions for the prevention and control of metabolic syndrome. To study the relationship of neck circumference to metabolic syndrome. A total of 367 individuals above 18 years were evaluated. The mean age of the patients was 52 ( $\pm 13.03$ ) years. The study included around 58% subjects with established cardiovascular disease. Metabolic syndrome was seen in 73.3% of them. Our study shows that females with neck circumference (NC)  $\geq 34$ cms, 75.4% had metabolic syndrome and male with NC  $\geq 37$ cms, 54.6% had metabolic syndrome. In our study, NC moderately correlated with common indices of obesity such as body mass index, waist circumference, waist/hip ratio.

Our observations indicate that NC as an index of upper body fat distribution. Measurement of NC is a simple, time saving and least invasive measurement tool and can be used as a measure to identify metabolic syndrome risk factors in patients.

[J Indian Med Assoc 2019; 117(9): 14-7]

**Key words :** Metabolic syndrome, neck circumference, waist circumference.

The metabolic syndrome (MetS) consists of a constellation of metabolic abnormalities that confer increased risk of cardiovascular disease (CVD) and diabetes mellitus (DM). The metabolic syndrome includes central obesity, hypertriglyceridemia, low level of high density lipoprotein cholesterol (HDL), hyperglycemia and hypertension<sup>1</sup>. The National Cholesterol Education Program's Adult Treatment Panel III report (ATP III)<sup>1</sup> and International Diabetes Federation criteria uses waist circumference as the anthropometric parameter to diagnose MetS<sup>2</sup>.

In India the prevalence of MetS has ranged from 11% to 41% depending on the region and rural or urban population and criteria used<sup>3-6</sup>. As a large number of people are affected the condition there is a need for a practical and reliable approach to diagnose the problem.

Neck circumference is a more practical and likely better measure than waist circumference, which may be especially useful in special populations such as morbidly obese people, patients in bed rest, and pregnant women. It is a simple, convenient but less used anthropometric measure,

which is correlated with waist circumference and BMI<sup>7</sup>, and has been associated with components of metabolic syndrome<sup>8-13</sup>. Neck circumference may be better in situations where waist circumference is not interpretable as a measure of central adiposity because of diurnal variation, clothing, last meal, empty bladder, pregnancy, and various health conditions. All these conditions are unlikely to impact neck circumference<sup>7</sup>.

Reports of relationship of neck circumference to MetS have been published from western countries. There are very studies on this relationship from the country<sup>13-15</sup>. Therefore this study was undertaken to determine the reliability of easily measurable neck circumference in comparison to waist circumference as a measure of MetS.

### AIMS AND OBJECTIVES

- To study the relationship of neck circumference to metabolic syndrome
- To determine the reliability of neck circumference in comparison to waist circumference as a measure of metabolic syndrome (MetS) criteria

### MATERIALS AND METHODS

It is a cross sectional study, carried out in patient who are attending Medicine OPD or admitted in Medicine ward in a teaching hospital. The study was carried out for a period of two years from September, 2015 to August, 2017. This study was approved by the Research Ethics Board of the Institute and informed consent was taken from the participants.

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**Inclusion criteria :**

Individual above 18 years with or without treatment for hypertension, diabetes mellitus and dyslipidemia were taken for the study.

**Exclusion criteria :**

Those with known history of unintentional weight loss due to malignancies, type 1 diabetes mellitus, chronic illness like chronic liver disease, chronic kidney disease, congestive heart failure, tuberculosis, HIV wasting syndrome, any individual with history of endocrine disorder and/or previous treatment with hormones or steroids were excluded. Pregnant and lactating mothers were also excluded.

**Sample size :**

A total 367 individual were taken, by taking the prevalence of MetS in Manipur was 20.5%<sup>5</sup> with absolute allowable error of 5%. The criteria for the metabolic syndrome according to International Diabetes Federation (IDF) was used for the study<sup>2</sup>.

Plasma glucose was estimated using glucose oxidase method using GLUC-PAP manufactured by Randox Laboratories Limited, 55 Diamond Road, Crumlin, County Antrim, BT29 4QY, United Kingdom. Lipid profile was estimated by enzymatic method using Vitros chemistry, Ortholand Diagnostics Inc, Rochester, NY, USA.

**OBSERVATIONS**

The study included total of 367 patients. Males accounted for 199 (54.2%) and females accounted for 168 (45.8%) of the cases. The mean age of the patients was 52 ( $\pm 13.03$ ) years. Two-hundred and twelve (57.8%) subjects belonged to age group below 60 years and 155 (42.2%) patients were above 60 years.

At study entry diabetes was already diagnosed in 122 (33.2%) of the study population, significantly higher in females (44% *versus* 24.1%;  $p < 0.001$ ). Hypertension was seen in 223 (60.8%) which was significantly higher among females (68.5% *versus* 54.3%;  $p = 0.006$ ). Dyslipidemia was seen in 6 (1.6%) of the patients, but no gender difference was seen (1.8% *versus* 1.5%). The most common clinical diagnosis was cerebrovascular accident (CVA) which was present in 42.8% of the patients followed by acute coronary syndromes (ACS) in 14.9% of the patients.

Systolic BP above 140mmHg was seen in 44.7% (164) of the patients and found to be significantly in females (51.2% *versus* 39.2%;  $p = 0.007$ ). Diastolic BP above 100mmHg was found in 9% (33) of the patients. BP > 130/85mmHg as required for metabolic syndrome diagnosis in our study was present in 243 (66.2%) of the patients.

Waist circumference for diagnosis of MetS according IDF criteria was met by 58.9% of the patients. Among males 64 (32.2%) met the IDF cut-off of  $\geq 90$ cm in waist circumference. Whereas, among females 152 (90.5%) met

the IDF cut-off of  $\geq 80$ cm. For waist/hip ratio 75.5% of the patients had waist/hip circumference ratio cut off  $\geq 0.90$  for male;  $\geq 0.85$  for female and the difference between males and females was found to be significant  $p < 0.001$  (57.8% *versus* 96.4%). Out of 367, 352 (95%) of the patients had a neck circumference (NC) between 30-40cm. BMI of 46.6% of patients were below  $25\text{kg/m}^2$  and 53.4% of the patients had BMI above  $25\text{kg/m}^2$ . There was no significant difference in BMI between sexes.

Fasting BG criteria for MetS ( $\geq 100\text{mg\%}$ ) was met by 54.1% and 35.1% of them had FBG  $\geq 126\text{mg/dl}$ , diagnosed as DM according to ADA criteria. Serum triglyceride cut-off of  $\geq 150\text{mg\%}$  was met by 43.9% of patients whereas HDL cut off value below 40 for males and below 50 for females was found in 73.8% of patients. Mean cholesterol value was  $161.79 \pm 49.86\text{mg/dl}$ , triglycerides was  $145.17 \pm 70.31\text{mg/dl}$ , HDL was  $37.47 \pm 9.57\text{mg/dl}$ , LDL of  $107.44 \pm 35.52\text{mg/dl}$ . In patients of metabolic syndrome, average FBG was  $145.15 \pm 75.75\text{mg/dl}$ , average triglyceride was  $161.90 \pm 72.62\text{mg/dl}$ , HDL was  $35.90 \pm 8.73\text{mg/dl}$ , LDL  $113.61 \pm 37.02\text{mg/dl}$ . Correlation of MetS with all these four parameters were statistically highly significant,  $p$ -value  $< 0.001$ , except for cholesterol levels.

Among 367 patients, 269 patients had MetS according to IDF criteria for MetS. Metabolic syndrome was present in 71.9% of male and 75% of females. Metabolic syndrome was present in 83.6% of T2DM patients, 63.5% of hypertensive patients. Among females with NC < 34cms, 24.6% had MetS, whereas among females with NC  $\geq 34$ cms, 75.4% had MetS. Among males with NC < 37cms, 45.4% had MetS, whereas among NC  $\geq 37$ cms, 54.6% had MetS. This correlation was highly significant  $p < 0.001$ .

ROC curve analysis of NC with metabolic syndrome, showed area under the curve was 74.5%. The cut off for NC was > 35.5cms, sensitivity of 62.8% and specificity of 77.6% as shown in figure. ROC curve analysis of waist circumference with MetS, showed area under curve was 71.8%. The cut off for waist circumference was > 89cms, sensitivity of 95% and specificity of 57.1%. ROC curve analysis of hip circumference with MetS, showed area under the curve was 61.4%. The cut off for hip circumference was > 98cms, sensitivity of 46.5% and specificity of 73.5%. ROC curve analysis of waist/hip circumference ratio with MetS, with area under curve being 61.4%. The cut off for waist/hip ratio was > 0.89cms, sensitivity of 75.5% and specificity of 57.1%.

**DISCUSSION**

In the present study MetS was seen in 73.3% of the subjects studied. This very high prevalence is most likely due to inclusion of a large number of stroke cases in the study. In this study, we looked into the association between neck circumference and MetS. We found that NC had



positive correlation with systolic and diastolic BP. NC also positively correlated with BMI.

Recent studies have shown that central adiposity rather than total body fat is a more serious clinical entity. Unfortunately, BMI is a poor descriptor of central adiposity<sup>17</sup>. In our study, NC strongly correlated with common indices of obesity such as BMI, WC, W/H ratio indicating that NC could be a useful screening tool for high BMI in adults. Relationships between obesity and health risks vary between populations. Asians are more susceptible so have lower BMI threshold than other populations, with an action for overweight defined at 23kg/m<sup>2</sup>.<sup>17</sup>

In our study, MetS was present in 71.9% of male and 75% females. This was almost similar to the Indian study by Nagendran *et al*<sup>14</sup>. The higher prevalence of MetS in the present study compared to previous study from our population is probably due to inclusion of a large proportion of patients with CVA and ACS in the present study which is in contrast to inclusion of apparently healthy nurses in the previous study.

Among females with NC<34cms, 24.6% had MetS, whereas among females with NC≥34cms, 75.4% had MetS. Among males with NC<37cms, 45.4% had MetS, whereas among NC≥37cms, 54.6% had MetS. The difference in free fatty acid storage between men and women may account for the stronger association we found between neck circumference and MetS risk factors among women.

All individual parameters of MetS risk factor ie, BMI, WC, W/H ratio, SBP, DBP, FBS, HDL and TG except hip circumference, total cholesterol were highly significant in patient with abnormal NC when compared with those with normal. For all risk factors, women exhibited a larger effect size in risk factor levels per SD increment in NC than men. This finding can be explained by differences in structures between men and women especially in India. It seems, therefore, that with increase in NC, the likelihood of risk factors for metabolic diseases also increases.

Correlation of MetS with NC, waist circumference and waist-hip ratio were highly significant. Our study confirmed previous findings in adults done by Ben Noun *et al*<sup>8</sup> who found that NC strongly correlated with BMI and could indeed be used as an additional and practical screening tool for identifying males and females who are obese (Table 1 & 2).

In the Framingham Heart Study which included 2732 subjects (mean age -57 years), NC was positively associated with risks of type 2 diabetes mellitus, hypertension, decreased HDL cholesterol, and increased triglyceride.

Table 1 — Comparison of clinical variables in relation to metabolic syndrome

Variables	Metabolic syndrome			P value
	No (n=269)	Yes (n=98)	Total	
Age in years	58.64±14.74	58.82±14.07	58.77±14.23	0.915
Neck circumference	34.12±2.34	36.12±2.34	35.59±2.50	0.001**
SBP (mmHg)	139.61±19.47	142.16±22.32	141.48±21.60	0.319
DBP (mmHg)	85.10±14.63	87.38±13.62	86.77±13.91	0.165
Height (cm)	160.35±6.91	161.01±7.29	160.83±7.19	0.434
Weight (kg)	65.14±10.50	66.88±11.55	66.41±11.29	0.193
Waist circumference	82.48±10.88	90.82±11.31	88.59±11.78	<0.001**
Hip circumference	94.55±10.60	98.97±11.36	97.79±11.32	0.001**
Waist hip ratio	0.87±0.05	0.92±0.05	0.91±0.05	<0.001**
BMI (kg/m <sup>2</sup> )	25.31±3.52	25.81±4.19	25.68±4.02	0.297

Comparison done using Student 't' test. \*\* - highly significant  
SBP- Systolic blood pressure; DBP- Diastolic blood pressure; BMI- Body mass index

Table 2 — Neck circumference in relation to other metabolic risk factors

Neck circumference	Karl Pearson correlation co-efficient r-value	p-value
BMI	0.432	<0.001**
Waist circumference	0.468	<0.001**
Hip circumference	-0.006	0.902
Waist/hip ratio	0.412	<0.001**
SBP(mmHg)	0.254	<0.001**
DBP(mmHg)	0.102	0.024*
FBG(mg/dl)	0.342	<0.001**
Total cholesterol (mg/dl)	0.012	0.602
LDL(mg/dl)	0.389	<0.001**
HDL(mg/dl)	-0.176	<0.001**
Triglycerides(mg/dl)	0.287	<0.001**
Age in years	0.024	0.524

BMI- Body mass index; SBP- Systolic blood pressure; DBP – Diastolic blood pressure; FBG- Fasting blood glucose; LDL- Low density lipoprotein cholesterol; HDL- High density lipoprotein cholesterol

After further adjustments for BMI and waist circumference, NC remained associated with type 2 diabetes mellitus<sup>16</sup>. Similar results were observed in a Turkish Adult Cohort Study in 1912 middle-aged and elderly individuals<sup>18</sup>. Using ROC curve analysis the cut off for NC was >35.5cms, sensitivity of 62.8% and specificity of 77.6% in our study. NC significantly correlated with all parameters of MetS risks in both genders (Fig 1).

#### CONCLUSION

Our observations indicate that NC as an index of upper body fat distribution can be used to identify MetS. NC>37cm for males and >34cm for females was the best cut off levels for determining the overweight/obese subjects; they are more prone for MetS and require additional evaluation.

Measurement of NC is a simple, time saving and least invasive measurement tool. NC may be used as a screening



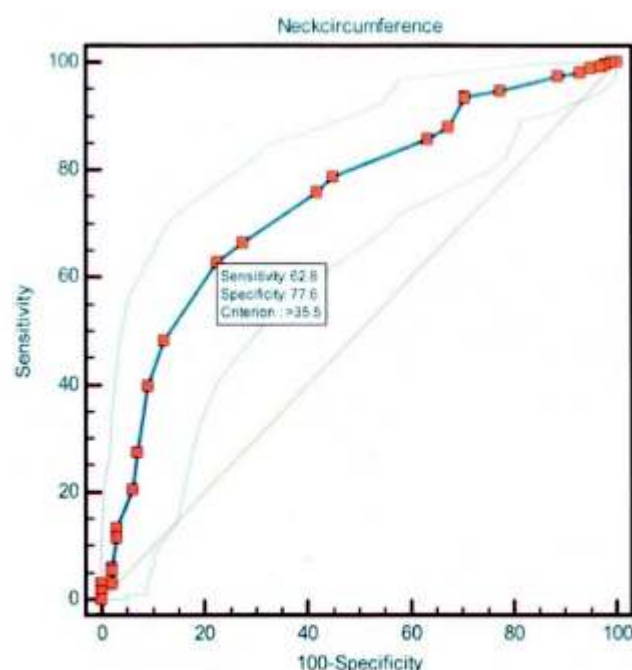


Fig 1 — ROC analysis curve of Neck Circumference

measure to identify MetS risk factors in patients.

#### Limitations of the study :

The present study has certain limitations : (i) this cross sectional design study limited extension of its interpretation to the causality of associations. And (ii) all the participants were from the same health examination center, and a selective bias could not be excluded.

Despite these limitations, our study has the advantage of introducing a simple and inexpensive method to predict metabolic risks in a large population. However, because the study was limited to the representatives of the study sample and cross sectional study design, further longitudinal studies in representative populations are required to obtain more conclusive results to establish NC as a basic criterion in the diagnosis of MetS.

#### REFERENCES

- Expert panel on detection, evaluation, and treatment of high blood cholesterol in adults. Executive summary of the third report of the national cholesterol education program (NCEP) expert panel on detection, evaluation, and treatment of high blood cholesterol in adults (adult treatment panel III). *JAMA* 2001; **285**(19): 2486-97.
- Alberti KG, Zimmet P, Shaw J — Metabolic syndrome – a new world-wide definition. A consensus statement from the International Diabetes Federation. *Diab Med* 2006; **23**(5): 469-80.
- Ramachandran A, Snehalatha C, Satyavani K, Sivasankari S, Vijay V — Metabolic syndrome in urban Asian Indian adults – a population study using modified ATP III criteria. *Diabetes Res Clin Pract* 2003; **60**: 199-204.
- Deepa M, Farooq S, Datta M, Deepa R, Mohan V — Prevalence of metabolic syndrome using WHO, ATP III and IDF definitions in Asian Indians: The Chennai Urban Rural Epidemiology Study(CURES-34). *Diabetes Metab Res Rev* 2007; **23**: 127-34.
- Geeta T, Ranabir S, Kamala D, Lallan P, Ibetombi D, Premchand S — Metabolic syndrome among nurses in Manipur. *J Clin Diabet* 2015; **1**: 7-11.
- Khan Y, Lalchandani A, Gupta AC, Khadanga S, Kumar S — Prevalence of metabolic syndrome crossing 40% in Northern India: Time to act fast before it runs out of proportions. *J Family Med Prim Care* 2018; **7**: 118-23.
- Joshipura K, Muñoz-Torres F, Vergara J, Palacios C, Pérez CM — Neck circumference may be a better alternative to standard anthropometric measures. *J Diabet Res* 2016; Volume 2016, Article ID 6058916, 8 pages. <http://dx.doi.org/10.1155/2016/6058916>.
- Ben-Noun L, Laor A — Relationship of neck circumference to cardiovascular risk factors. *Obes Res* 2003; **11**: 226-31.
- Ben-Noun L, Laor A — Relationship between changes in neck circumference and cardiovascular risk factors. *Exp Clin Cardiol* 2006; **11**: 14-20.
- Yang GR, Yuan SY, Fu HJ, Wan G, Zhu LX, Bu XL, *et al* — Neck circumference positively related with central obesity, overweight, and metabolic syndrome in Chinese subjects with type 2 diabetes: Beijing Community Diabetes Study 4. *Diabetes Care* 2010; **33**: 2465-7.
- Stabe C, Vasques AC, Lima MM, Tambascia MA, Pareja JC, Yamanaka A, *et al* — Neck circumference as a simple tool for identifying the metabolic syndrome and insulin resistance: results from the Brazilian Metabolic Syndrome Study. *Clin Endocrinol (Oxf)* 2013; **78**(6): 874-81.
- Zhou JY1, Ge H, Zhu MF, Wang LJ, Chen L, Tan YZ, *et al* — Neck circumference as an independent predictive contributor to cardio-metabolic syndrome. *Cardiovasc Diabetol* 2013; **12**: 76.
- Kumar S, Gupta A, Jain S — Neck circumference as a predictor of obesity and overweight in rural central India. *Int J Med Public Health* 2012; **2**: 62-6.
- Kumar NV, Ismail MH, Mahesha P, Girish M, Tripathy M — Neck circumference and cardio-metabolic syndrome. *J Clin Diagn Res* 2014; **8**: 23-5. Published online Jul 20. doi: 10.7860/JCDR/2014/8455.4641.
- Bochaliya RK, Sharma A, Saxena P, Ramchandani GD, Mathur G — To evaluate the association of neck circumference with metabolic syndrome and cardiovascular risk factors. *J Assoc Physicians India* 2019; **67**: 60-2.
- Preis SR, Pencina MJ, D'Agostino RBS, Meigs JB, Vasan RS, Fox CS — Neck circumference and the development of cardiovascular disease risk factors in the Framingham heart study. *Diabetes Care* 2013; **36**(1): e3. Published online 2012 Dec 11. doi: 10.2337/dc12-0738.
- Ataie-Jafari A, Namazi N, Djalalinia S, Chaghamirzayi P, Abdar ME, Zadehe SS, *et al* — Neck circumference and its association with cardiometabolic risk factors: a systemic review and meta-analysis. *Diabetol Metab Syndr* 2018; **10**: 72.
- Onat A, Hergenc G, Yuksel H, Can G, Ayhan E, Kaya Z, *et al* — Neck circumference as a measure of central obesity: Associations with metabolic syndrome and obstructive sleep apnea syndrome beyond waist circumference. *Clin Nutr* 2009; **28**: 46-51.



## Original Article

# Demographic and clinical profile of agricultural ocular injuries in farmers

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During the period of harvesting of crops, accidental ocular injuries are common in farmers. It can be from superficial ocular injury to globe rupture. Superficial ocular injury, commonly corneal, if not treated properly can lead to permanent damage and blindness. Aims and objectives of this study were to find out Demographic and Clinical Profile of Agricultural Ocular Injuries among Farmers, and to increase awareness regarding uses of protective measures during farming and to prevent further injuries. This retrospective clinical audit was conducted in the Department of Ophthalmology of a government hospital of Eastern India. Farmers 20 years and above of age was admitted in the In Patients Department with ocular injuries related to farming. Data was collected from in patients register. Total 124 patient data was collected. Male (M) was more common than female (F), male and female ratio was 3.13. Most common age group was 31-40 years, which was 50% (62). Mean age of study population was  $37.23 \pm 8.16$  yrs. Unilateral ocular injury was more common than closed globe injury. Most common mode of ocular injury was due to rice grain injury, 32.26% (40). Commonest diagnosis of hospital admission was corneal ulcer, 20.7% (25) followed by ruptured globe 10.4% (13). To minimize ocular injury during field work increased awareness regarding the use of protective measures is necessary. To reduce ocular morbidity after ocular injury awareness among the community for prompt contact with ophthalmic health care providers and hospitals is also additionally required.

[J Indian Med Assoc 2019; 117(9): 18-20]

**Key words :** Farmer, demographic profile, ocular injury.

Ocular injury is common in farmers during agricultural work. It was seen that agriculture related ocular injury is most common among farmers in the developing world<sup>1</sup>. Though few studies suggest that agricultural ocular injuries may be common, but in India, the prevalence of ocular injuries in agriculture workers is still unknown<sup>2,3</sup>. Superficial corneal abrasion occurring in farmers during agriculture work is a major risk factor for microbial keratitis in India and other developing countries<sup>4</sup>. Fungal corneal ulcer is very difficult to diagnose and treat<sup>5</sup>. The risk of developing fungal corneal ulcer seems to be very high in agriculture workers, associated with a minor trauma of vegetative material. Regional variation of ocular injury is well known. This retrospective clinical audit was undertaken to find the causes of ocular injury in farmers in the adjacent region of Burdwan Medical College and Hospital, West Bengal, India.

### AIMS AND OBJECTIVES

(1) Find out the demographic and Clinical Profile of Agricultural Ocular Injuries in Farmers.

(2) Increase awareness regarding uses of protective measures during farming and to prevent further injuries.

### MATERIALS AND METHOD

This is a retrospective hospital based clinical audit. Case records of patients admitted with history of ocular injury during agriculture work, in the department of Ophthalmology, Burdwan Medical College and Hospital were reviewed for last 3 years, Jun 2015- May 2017. Patients aged 20 years and above were included in this study. As this is a retrospective clinical audit, so there are no risks of study subjects. The study was approved by the Institutional Ethical Board. The data was collected from the in patients record, this included patients demographic details, time interval between injury and admission, diagnosis at the time of admission, protective measures used or not during agriculture work. Demographic details of the patients are depicted in Table 1. Statistical analysis was performed using Microsoft office excel 2007. Normal distribution data are shown as mean values  $\pm$  standard deviations.

### RESULTS

Total 172 patients were admitted with agriculture related ocular diseases in between Jun 2015- May 2017, among them only 124 patients with complete follow up records were included in the study. Male (M) patients 94(75.81%)

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were more common than female (F) patients 30(24.19%), male and female ratio was (M:F) 3.13:1. Most common age group was 31-40 years, which was 50% (62). Mean age of the study patients were  $37.23 \pm 8.16$  years, of which youngest age was 20 years and oldest age was 70 years. Unilateral 95.97%(119) and closed globe 89.5%(111) ocular injury were common finding in this study. Mean time interval between injury and hospital admission were  $57.49 \pm 46.35$  hours. Rice grain injury was the commonest mode of ocular injury, which was 32.26%(40), followed by vegetative material 24.2%(30). Corneal ulcer was the most common cause of hospital admission, which was, 38.71% (48) followed by Hypopyon corneal ulcer 21.77% (27), so corneal ulcer was enormous clinical diagnosis, about 60.48% (75) of study populations. Next to the corneal ulcer, traumatic hyphema, 11.29% (14) and ruptured globe 10.48%(13) were most common cause of hospital admission. 23(18.55%) patients gave history of using protective measures, while 101(81.45%) patients didn't use any protective measures.

Table 1 depicted demographic profile, Table 2 showing the age & sex distribution of study populations and Causal factors of ocular injury were depicted in Table 3, Table 4 showing extent of visual loss at presentation respectively. Pie diagram (Fig 1) used to shown clinical diagnosis.

### DISCUSSION

Injury and work, both are interconnected. Agriculture associated eye injuries are not uncommon in farmers and some of which can be extremely sight threatening<sup>6</sup>. Agricultural trauma is an important cause of monocular blindness in rural India. The visual outcome depends upon the site and size of the injury and the extent of the ocular damage<sup>7</sup>. In this retrospective clinical audit, we found that male patients were admitted with ocular injury mostly

Table 1 — Demographic profile of patients of this retrospective clinical audit (n=124)

Demographic profile	No (%)
Sex :	
Male	94(75.81%)
Female	30(24.19%)
Religion :	
Hindu	45(36.29%)
Muslim	64(51.61%)
Christian	15(12.1%)
Laterality :	
Bilateral	05(4.03%)
Unilateral	119(95.97%)
Type of Injury :	
Open globe	13(10.5%)
Closed globe	111(89.5%)

Mean time between injury and admission :  $57.49 \pm 46.35$  in Hours.  
Mean age of study patients:  $37.23 \pm 8.16$  in years

compared to female. This result is corroborative with the findings from South Indian study by Srinivasan M *et al*<sup>8</sup>. We also recorded out, young adults, in their most productive lives were predominantly admitted with injury, so there is increased burden to the society. This burden can be reduced by improvement in basic farming technique and use of protective eye wear during agriculture work. Another major

Table 2 — Showing age and sex wise distribution of patients (n=124)

Age in years	Male	Female	Total (%)
20-30	22	8	30(24.2%)
31-40	44	18	62(50%)
41-50	20	2	22(17.74%)
≥ 50	8	2	10(8.06%)
Total	94(75.81%)	30(24.19%)	124(100%)

Male & Female Ratio (M : F) = 3.13 : 1

Table 3 — Showing Objects Causing Ocular Injury (n=124)

Objects	Open globe injury	Closed globe injury	Total(%)
Rice grain	0	40	40(32.26%)
Vegetative material	0	22	22(17.74%)
Animal	4	26	30(24.2%)
Fish hook	2	0	2(1.61%)
Chemical	0	4	4(3.22%)
Stone	1	3	4(3.23%)
Tree branch	4	5	9(7.26%)
Wooden stick	2	11	13(10.48%)

Table 4 — Extent of visual loss at Admission and BCVA at 2 months of follow up (n=124)

Visual acuity	No of cases at admission & (%)	No of cases at 2 month follow up & (%)
Better than 6/60	70(56.45%)	94(75.81%)
6/60 to 2/60	41(33.06%)	19(15.32%)
1/60 to HM	3(2.42%)	2(1.61%)
PL+, PR+	4(3.23%)	3(2.42%)
No PL	6(4.84%)	6(4.84%)
Total	124(100%)	124(100%)

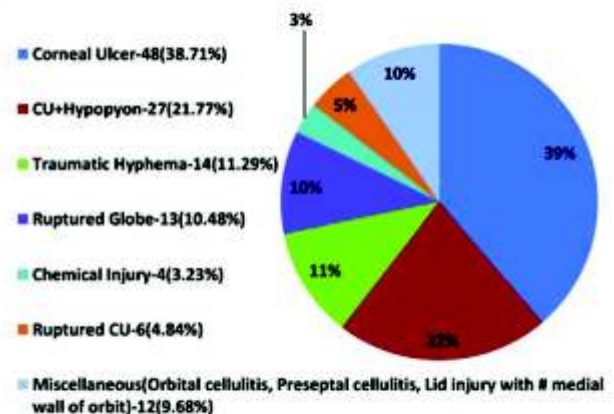


Fig 1 — Pie diagram showing Clinical diagnosis at the time of admission (n=124)

finding were delayed presentation to the hospital, this is most likely due to lack of education and awareness. Our findings correlates with another study from South India by Rajappa SA *et al*<sup>9</sup>, they reported that majority of ocular injury patients were young adults in their productive lives and had a delayed presentation after ocular injury. In a study, Clinical profile and visual outcome of ocular injuries



in a rural area of Western India by Misra S *et al*<sup>7</sup>, also reported that Ocular injuries were more commonly seen in adult patients and more commonly associated with agricultural work. As there is enormous variation in environment, in country like India there must be etiological difference in agricultural ocular injury. Rice grain and vegetable materials are accounted for the highest number of injuries in our study. Rice is a major crop grown in state of West Bengal in monsoon season, so farmers are commonly exposed to ocular injuries during harvesting. Animal tails are being one more common source of accidental ocular injury. During bathing and washing of cattle, farmers are being accidentally hit by cattle tail. In a study in North India by Goel R *et al*<sup>10</sup> found that common cause of ocular injury was due to sugarcane leaves 36.7% and 25.5% (n=718) ocular injury was of animal matter corneal injury, but in our study rice grain 32.26% and animal 24.2% causes ocular injury. These important clinical finding signify geographical variation in Indian subcontinent. Corneal injury, even minor, is a predisposing factor for progression of corneal ulcer. In a study in South India by Gopinathan U *et al*<sup>11</sup>, (n= 1353), 54.4% cases of fungal keratitis had history of trauma typically in agricultural work. We also audited out corneal ulcer (38.71%) was the major clinical diagnosis of hospital admission. Administration of prophylactic antimicrobial within 48 hours resulted in healing in corneal abrasion without sequel<sup>10</sup>, but in your study we found that mean time between injury and admission was 57.49±46.35 hours. It is probably due to lack of awareness, and a tendency to visit local quack and chemist for treatment and maximum patients did not use any protective measures while doing agriculture work, neither had any idea about those measures.

#### CONCLUSION

The regional information is important as the causative agent and pattern of ocular injury varies significantly from region to region with regard to facilities of empirical management. Prevention of injury itself by using protective goggles, eye shield and headgear during the agriculture work is cheaper and more feasible option.

#### Study Limitations :

The main limitation of our study is its retrospective clinical audit design. Because all cases were collected from a tertiary care hospital, there is a possibility of referral bias.

#### Acknowledgement :

We, the authors of this article thankfully acknowledge the encouragement and help received from the scholars whose articles have been cited in the reference section. We pay our appreciation to authors/editors/publishers of

all those articles/journals/books from where the reviews and literatures for the discussion have been collected.

#### REFERENCES

- 1 Islam SS, Doyle EJ, Vellila A, Martin CJ, Ducatman AM — Epidemiology of compensable work-related ocular injuries and illnesses: Incidence and risk factors. *Journal of Occupational and Environmental Medicine* 2000; **42**: 575-81.
- 2 Nirmalan PK, Katz J, Tielsch JM, Robin AL, Thulasiraj RD, Krishnadas R, *et al* — Ocular trauma in rural south Indian population. The Aravind Comprehensive Eye Survey. *Ophthalmol* 2004; **111**: 1778-81.
- 3 Krishnaiah S, Nirmalan PK, Shamanna BR, Srinivas M, Rao GN, Thomas R — Ocular trauma in rural population of southern India: The Andhra Pradesh Eye Disease Study. *Ophthalmol* 2006; **113**: 1159-64.
- 4 Thylefors B — Epidemiological patterns of ocular trauma. *Aust N Zealand J Ophthalmol* 1992; **20**: 95-8.
- 5 Liesegang TJ, Forster RK — Spectrum of microbial keratitis in South Florida. *Am J Ophthalmol* 1980; **90**: 38-47.
- 6 Sprince NL, Zwerling C, Whitten PS, Lynch CF, Burmeister LF, Gillette PP, *et al* — Farm activities associated with eye injuries in the Agricultural Health Study. *J Agromedicine* 2008; **13**: 17-22.
- 7 Misra S, Nandwani R, Gogri P, Misra N — Clinical profile and visual outcome of ocular injuries in a rural area of western India. *Australasian Medical Journal* 2013, **6**, 11, 560-4.
- 8 Srinivasan M, Upadhyay MP, Priyadarsini B, Mahalakshmi R, Whitcher JP — Corneal ulceration in south-east Asia III: prevention of fungal keratitis at the village level in south India using topical antibiotics. *Br J Ophthalmol* 2006; **90**: 1472-5.
- 9 Rajappa SA, Khardenavis S, Parikh AS — Clinical Study of Mechanical Ocular Injuries and their Visual Outcome. *Journal of Evolution of Medical and Dental Sciences* 2014; **3**(5): 1164-73, DOI: 10.14260/jemds/2014/1962.
- 10 Goel R, Malik KPS, Goel A, Sharma N, Aggarwal A — Agriculture related corneal injuries. *Nepal J Ophthalmol* 2013; **5**: 45-9.
- 11 Gopinathan U, Garg P, Fernandes M, Sharma S, Athmanathan S, Rao GN — The epidemiological features and laboratory results of fungal keratitis: a 10-year review at a referral eye care center in South India. *Cornea* 2002; **21**: 555-9.

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## Case Report

# Myocardial rupture due to viral myocarditis — a case report

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**Cardiac tamponade resulting from cardiac rupture causes sudden death. Cardiac rupture occurring secondary to myocarditis is a rare event. Myocarditis is an inflammatory disease of the myocardium; the diagnosis is often made at autopsy. We report a case of sudden death due to cardiac tamponade from rupture of heart due to fulminant myocarditis. Histological findings at the rupture site revealed myocyte necrosis and lymphocyte infiltrate, suggesting viral myocarditis. Present report highlights the role of histopathology during autopsy.**

[J Indian Med Assoc 2019; 117(9): 21-3]

**Key words :** Sudden death, Cardiac tamponade, Viral myocarditis, Histology, Cardiac rupture.

Sudden death is a death occurring in a person, not known to have been suffering from any dangerous disease, injury or poisoning, within 24 hours of the onset of terminal illness. Cardiovascular diseases are the commonest causes of sudden death followed by respiratory system diseases and central nervous system diseases.

Myocarditis, one of the causes of sudden death is defined as “a process characterized by an inflammatory infiltrate of the myocardium with necrosis and/or degeneration of adjacent myocytes, not typical of ischemic damage associated with coronary artery disease”<sup>1</sup>. It presents with a wide range of clinical features. In asymptomatic cases, the diagnosis is often made at postmortem. The necrosed muscle can give way for spontaneous cardiac rupture, leading to haemopericardium and cardiac tamponade.

### CASE REPORT

A 55 year old male social worker collapsed at a public forum while delivering a speech. He was brought to the hospital within half an hour of the incident and was declared brought dead. The body was sent for postmortem examination. On enquiry from the relatives of the deceased, it was found that he did not have previous history of any kind of illness and was not on any medications.

The deceased was a moderately built and nourished male, measuring 166 cm in length and weighing 65 kg. No visible external injuries were found over the body. On opening the pericardial cavity, 280 ml of blood and blood clots were seen (Fig 1). There was a rupture of the myocardium, measuring about 1.5x0.5xcavity depth over posterior surface of left ventricle (Fig 2). There was no gross evidence suggestive of old healed or recent myocardial infarction. Both the coronaries showed mild atherosclerotic changes with no significant blockade. The valves and heart chambers were normal. Other organs were unremarkable on gross examination.

Microscopic examination of heart revealed extensive lytic necrosis of myocardial fibres at the rupture site (Fig 3). Lipofuscin laden macrophages, with epicardial fat necrosis and subendocardial



Fig 1 — 280 ml of blood mixed with clots present in pericardial cavity



Fig 2 — Myocardial rupture over posterior surface of left ventricle 1.5X0.5cm X Cavity depth

histiocytic infiltration with pericapillary lymphocytes were seen (Fig 4). In sections from posterior and left ventricular wall, occasional lymphohistiocytic infiltration was noted.

Chemical analysis report was negative for any toxic substances.

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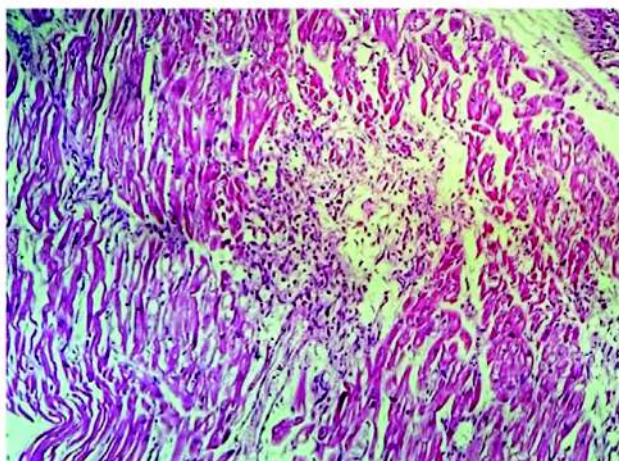


Fig 3 — Lytic necrosis of myocardial fibres at rupture site (H&E-5X)

On perusal of chemical analysis report, histopathological examination and postmortem findings, cause of death was opined as Cardiac tamponade following left ventricular rupture secondary to fulminant myocarditis.

#### DISCUSSION

The accumulation of fluid in the pericardium in an amount sufficient to cause serious obstruction to the inflow of blood to the ventricles and therefore reduced cardiac output, results in cardiac tamponade. The quantity of the pericardial fluid may be as small as 200 ml when the fluid develops rapidly or more than 2000 ml in slowly developing effusions<sup>2</sup>.

Cardiac tamponade due to cardiac rupture is a common complication, resulting from the mechanical weakening that occurs in necrotic and inflamed myocardium resulting in decrease in the cardiac output and circulatory collapse. Acute free wall ruptures are usually rapidly fatal<sup>3</sup>. It is commonly seen in myocardial infarction<sup>4</sup>. However, some cases have also reported cardiac rupture associated with myocarditis<sup>5,6</sup>.

The prevalence of acute myocarditis is unknown because most cases are not recognized on account of non-specific or no symptoms (but sudden death may occur)<sup>7</sup>. The diagnosis is often made at postmortem, where no clinical evidence of myocardial failure has been present<sup>8</sup>. Studies report that frequency of myocarditis range from 0.11 to 5.55% in the general population<sup>8,9</sup>. Myocarditis encompasses a diverse group of clinical entities in which infectious agents and/or inflammatory processes primarily target the myocardium<sup>3</sup>. Among the infectious agents, viruses have been considered as important cause of myocarditis<sup>1,10</sup>, with Coxsackieviruses A and B accounting for a majority of cases<sup>3</sup>, followed by Adenovirus, Cytomegalovirus, Epstein-Barr virus & influenza virus. Other infectious causes are bacterial, parasitic and fungal which are rare. The non-infectious causes include autoimmune disorders and exposure to toxic agents.

Viral myocarditis manifests as a sequence of three phases. In the first phase, there is direct destruction of the cardiomyocytes viruses, causing degradation of the cell structures, which in turn facilitates entry of the virus into the cells leading to further myocyte injury and cardiac dilatation. This phase often goes unnoticed because the further damage is prevented by innate immune response. The second phase occurs due to immune dysregulation caused by the

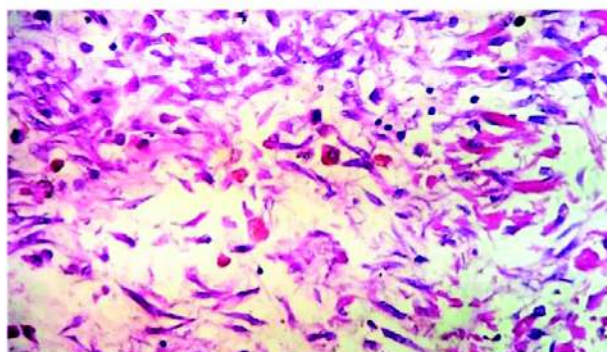


Fig 4 — Lipofuscin laden macrophages, histiocytes, lymphocytes with epicardial fat necrosis (H&E-20X)

epitopes shared between the cardiac and the viral antigens. In the third phase, chronic myocarditis or dilated cardiomyopathy develops due to extensive myocardial injury<sup>11</sup>.

Myocardium is weakened and more vulnerable to rupture in 1st phase of acute myocarditis<sup>11</sup>, which happened in the present case.

Symptoms of acute myocarditis are vague in many patients; often starting with flu-like symptoms, either of the upper respiratory or gastrointestinal tracts, before any cardiac symptoms appear. The prognosis in acute myocarditis is generally good because left ventricular function improves in most cases<sup>5</sup>.

Endomyocardial biopsy is the diagnostic tool in clinically suspicious cases of myocarditis. The histopathologic diagnosis of myocarditis as specified by the Dallas' criteria requires an inflammatory infiltrate and associated myocyte necrosis and damage not characteristic of an ischaemic event. It commonly occurs in lateral wall of left ventricle.<sup>1</sup>

In cases of virus induced inflammatory alterations of the myocardium, the infiltrates are predominantly lymphocytes and macrophages<sup>12,13</sup>.

Viral serology, cultures and even DNA hybridization techniques almost fail to detect a virus, especially during the early phase<sup>14</sup>; they are of little assistance in establishing a diagnosis. For the Forensic pathologist, the diagnosis of viral myocarditis rests in the histologic appearance of lymphocytic inflammatory cell infiltrate with myocyte necrosis<sup>15</sup>.

This case report highlights the importance of histological analysis during autopsies, so as to help families come to terms with death in a previously healthy relative. Immunohistochemistry and molecular biological techniques can be used for confirmation of viral myocarditis.

#### ACKNOWLEDGEMENT

Authors are thankful to the Department of Pathology SDM College of Medical Sciences & Hospital, Dharwad for their help in preparation and reading the microscopy slides.

**Conflict of interest :** Authors declare no conflict of interest with any company or institution or organization.

**Contribution :** All the authors have contributed to the manuscript.

#### REFERENCES

- 1 Liu P, Baughman KL. Myocarditis. In: Bonow RO, Mann DL, Zipes DP, Libby P, editors. Braunwald's Heart Disease- A textbook of cardiovascular medicine. 9<sup>th</sup> ed. Elsevier: Saunders; 2012. 1595-610.
- 2 Braunwald E — Pericardial disease. In: Harrison's Principles of Internal Medicine. Kasper DL, Hauser SL, Jameson JL,



- Fauci AS, Longo DL, Loscalzo J, editors. 19<sup>th</sup> ed. McGraw Hill Education, USA. 2015; 1571-6.
- 3 Schoen JF — The Heart. In: Pathologic Basis of Diseases. Kumar V, Abbas AK, Fausto N, editors. 7<sup>th</sup> ed. Elsevier, London. 2004; 584.
  - 4 Lin CH, Lu MJ, Chieng SH, Hung CR — Spontaneous cardiac rupture. *Ann Thorac Surg* 2003; **76**: 921-3.
  - 5 Ito M, Tanabe Y, Suzuki K, Kumakura M, Kimura K, Masani F, et al — Left ventricular free wall rupture in acute fulminant myocarditis during long-term cardiopulmonary support. *Jpn Circ J* 1999; **63**: 397-9.
  - 6 Gouda HS, Kumar L, Malur PR, Patil SY — Cardiac tamponade secondary to fulminant myocarditis - A case of custodial death. *J Forensic Leg Med* 2011; **18**: 30-3. doi: 10.1016/j.jflm.2010.10.005. Epub 2010 Nov 10.
  - 7 Oakley CM — Myocarditis, pericarditis and other pericardial diseases. *Heart* 2000; **84**: 449-454. Downloaded from <http://heart.bmj.com/> on July 1, 2016 - Published by group.bmj.com.
  - 8 Kyto V, Saraste A, Pulkki LMV, Saukko P — Incidence of Fatal Myocarditis: a Population-based study in Finland. *Am J Epidemiol* 2007; **165**: 570-4.
  - 9 Carniel E, Sinagra G, Bussani R, Di Lenarda A, Pinamonti B, Lardieri G, et al — Fatal Myocarditis: morphologic and clinical features. *Ital Heart J* 2004; **5**: 702-6.
  - 10 Nwizu C, Onwuanyi AE — Acute Myocarditis Presenting as Cardiac Tamponade. *J Natl Med Assoc* 2004; **96**: 1505-6.
  - 11 Robert D, Harry JC, Stephane H — Acute viral myocarditis. *European Heart Journal* 2008; **29**: 2073-82.
  - 12 Dettmeyer R, Madea B — Sudden, Unexpected Death Related to Viral Myocarditis. In: Forensic Pathology Reviews. Vol 2, Tsokos M, editor. Humana Press, New Jersey 2005; 169-88.
  - 13 Kondo T, Nagasaki Y, Takahashi M, Nakagawa K, Kuse A, Morichika M, et al — An autopsy case of Cardiac Tamponade caused by a ruptured ventricular aneurysm associated with acute myocarditis. *Legal Medicine* 2016; **18**: 44-8.
  - 14 Brodison A, Swann JW — Myocarditis: a review. *J Infection* 1998; **37**: 99-103.
  - 15 Dowling G — Sudden Natural Death. In: Forensic Pathology-Principles and Practice. Dolinak D, Matshes EW, Lew EO, editors. Elsevier Academic Press 2005; 86-9.

(Continued from page 13)

limbal autograft (limbal based conjunctival autograft in this study) is considered as a standard procedure now-a-days as different other methods fail to show better outcome. Here from this study we have found reduced early complications with equal effectiveness to prevent recurrences— 07.70% in ACR Flap group compared to 03.80% in LBC Autograft. Stage 4 pterygium shows recurrences more compared to others ( $p=0.049$ ).

ACRF technique is very much helpful in reducing post-operative graft oedema and granuloma formation in early post-operative period compared to LBCA technique. Patent sub-conjunctival capillary network underneath the anchored conjunctiva, one less suture with less handling of the graft are the causative factors. In this modern era of sutureless pterygium surgery, studies are needed with large sample size with sutureless surgical procedures to be conducted. Apart from the limitation ie, small sample size, relatively short follow up, Vascularity (V)- Conjunctival tissue thickness(C)- Corneal tissue thickness(K) grading to denote the characteristics of pterygium and their correlation with recurrence not studied. As the graft orientation is different in two groups and the surgeon and the outcome assessor was the same person, so assessment bias is a major limitation. To conclude we can say that this newer flap technique is less time consuming, more effective to reduce early post-operative complication and equally effective in reducing recurrence as in the standard surgical treatment.

#### REFERENCES

- 1 Duke-Elder S — System of Ophthalmology. In: Duke-Elder S(ed). Diseases of the Outer Eye, 2nd edition. St. Louis, CV Mosby 1965; 573.
- 2 Moran DJ, Hollows FC — Pterygium and ultraviolet radiation: a positive correlation. *British Journal of Ophthalmology* 1984; **68**: 343-6.
- 3 Park CY, Choi JS, Lee SJ, Hwang SW, Kim EJ, Roy S, et al — Cyclooxygenase-2-expressing macrophages in human pterygium co-express vascular endothelial growth factor. *Mol Vis* 2011; **17**: 3468-80. Published online 2011 Dec 29.
- 4 Chui J, Di Girolamo N, Wakefield D, Coroneo MT — The pathogenesis of pterygium: current concepts and their therapeutic implications. *Ocul Surf* 2008; **6**(1): 24-43.
- 5 Hernández-Bogantes E, Amescua G, Navas A, Garfias Y, Ramirez-Miranda A, Lichtinger A, et al — Minor ipsilateral simple limbal epithelial transplantation (mini-SLET) for pterygium treatment. *British Journal of Ophthalmology* 2015; **99**(12): 1598-600.
- 6 Kim SH, Oh JH, Do JR, Chuck RS, Park CY — A comparison of anchored conjunctival rotation flap and conjunctival autograft techniques in pterygium surgery. *Cornea* 2013; **32**(12): 1578-81. doi: 10.1097/ICO.0b013e3182a73a48.
- 7 Aydin A, Karadayi K, Aykan U, Can G, Colakoglu K, Bilge AH — Effectiveness of topical ciclosporin A treatment after excision of primary pterygium and limbal conjunctival autograft. [Article in French]. *J Fr Ophthalmol* 2008; **31**(7): 699-704.
- 8 Arain MA, Yaqub MA, Ameen SS, Iqbal Z, Naqvi AH, Niazi MK — Amniotic membrane transplantation in primary pterygium compared with bare sclera technique. *Journal of the College of Physicians and Surgeons Pakistan* 2012; **22**(7): 440-3.
- 9 Kheirkhah A, Hashemi H, Adelpour M, Nikdel M, Rajabi MB, Behrouz MJ — Randomized trial of pterygium surgery with mitomycin C application using conjunctival autograft versus conjunctival-limbal autograft. *Ophthalmology* 2012; **119**(2): 227-32.
- 10 Mauro J, Foster CS — Pterygia : pathogenesis and the role of subconjunctival bevacizumab in treatment. *Semin Ophthalmol* 2009; **24**(3): 130-4. doi: 10.1080/08820530902801106.
- 11 Koranyi G, Seregard S, Kopp ED — Cut and paste: a no suture, small incision approach to pterygium surgery. *British Journal of Ophthalmology* 2004; **88**: 911-4.



## Case Report

### Myositis ossificans progressiva

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**Myositis Ossificans Progressiva (MOP) is a very rare disease caused by heterotopic ossification of muscles and connective tissue. At present the preferred name is Fibrodysplasia Ossificans Progressiva (FOP). This disease is so rare that full spectrum of clinical features is yet to be established. This case has thoracic deformity, which is not found on careful review of literature. It is being reported to sensitize the physicians, so that the diagnosis may not be delayed. This case report also shows the rare association of thoracic deformity with MOP.**

[J Indian Med Assoc 2019; 117(9): 24-5]

**Key words :** Thoracic deformity, fibrodysplasia ossificans progressiva.

**M**ysitis ossificans Progressiva is a rare autosomal dominant disorder of connective tissue characterized by congenital malformations and progressive ectopic calcification of striated muscles and connective tissue<sup>1</sup>. The point prevalence of MOP is approximately 1 per 2 million of the population worldwide with no racial, ethnic, sexual or geographic predisposition<sup>1</sup>. Only a few cases have been reported from India and around 700 cases have been reported till now in the literature<sup>2,3</sup>. It is such a rare disease that many of its features may remain unrecognized and unknown<sup>4</sup>. The case which is reported here has got a thoracic deformity in the form of depression of the left lower part of the anterior chest. MOP is always associated with a number of specific congenital bony deformities<sup>1,3</sup>. On careful review of literature, association of such congenital deformity of thoracic cage with MOP is not found<sup>1,4</sup>. This case is being reported to show the rare association of congenital thoracic deformity with the rare disease of MOP. This case report will also sensitize the physicians about this rare disease.

#### CASE REPORT

An eleven and a half year old boy born to a non-consanguineous couple, presented with stiffness and painful restriction of movements of neck, trunk and limbs. He also complained of multiple hard swellings on neck, trunk and proximal limbs. The disease process started at the age of 3½ years. He first developed painful swelling of upper part of back including neck. This was associated with fever. Pain subsided after a few weeks. Diffuse induration persisted for several months and multiple hard swellings developed in the affected area over years. Such attacks occurred recurrently involving newer areas of trunk and proximal limbs. Gradually, the patient lost the ease of movements of the spine initially and limbs subsequently. Family history was negative.

**Examination** — On examination, the upright posture was characterized by fixed flexion and left lateral bending of the spine.

The limbs were fixed at proximal joints (Fig 1). Gait was rather stiff with markedly diminished accessory movements. Movements of the distal small joints including ankles and wrists were, however, normal. There were multiple hard bony swellings on neck, trunk and proximal limbs (Fig 2). Great toes of both sides were significantly small (Fig 1). Thoracic deformity in the form of depression of the anterior wall of the chest on its left lower part was remarkable (Fig 1).

**Investigation** — X-ray examination showed ossification in the soft tissues at multiple sites of cervical, dorsal, lumbar regions of the trunk and proximal limbs. Serum biochemistry was normal (Calcium 9.25 mg/dl, Phosphate 5.5 mg/dl, Alkaline phosphate 80 U/L, CPK 45 U/L). Routine Blood Examination did not reveal any abnormality.

**Treatment** — Analgesics and corticosteroids were given during relapse for symptomatic relief.

#### DISCUSSION

Fibrodysplasia ossificans progressiva (FOP) is the preferred



Fig 1 — Showing stiff posture, thoracic deformity and short great toes

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Fig 2 — Showing multiple hard bony swellings

name at present.<sup>5</sup> Spontaneous ossification of muscles and connective tissue associated with specific deformities of the great toes is diagnostic of MOP<sup>1,3,6</sup>.

The condition is an autosomal dominant trait and most of the affected persons (95%) represent new mutation for the determinant gene, *ACVR1*, chromosomal locus 2q23-24<sup>7</sup>. The identification of the mutant gene is possible by genetic linkage studies. Antenatal diagnosis is possible, but prevention of birth of affected babies may not be possible by antenatal screening as 95% of the cases are sporadic.

MOP usually manifests between birth and 10 years of age with a mean age of 3 years. Ectopic ossification is usually preceded by episodes of myositis. The process often starts at the neck and progresses gradually to involve the dorsal and the lumbar regions of the trunk followed by proximal limbs. Ultimately, the child is encased in a rigid sheet with fixed posture. Ambulation is classically lost in the twenties and thirties due to ankylosis of hips. Hands, forearms and lower legs are usually spared. Major complications arise from rigidity of the rib cage and ankylosis of the jaw causing restrictive lung disease and nutritional impairment respectively<sup>1,2,4</sup>.

People with MOP form skeletal deformities in two ways. Deformities which are produced during embryogenesis as a part of normotopic bone formation are congenital. Heterotopic ossification of muscles and connective tissue causes acquired deformity and develops after birth<sup>1</sup>. The majority of the patients of MOP are born with congenital bony malformations that include short hallux,

microdactyly and clinodactyly of fingers, polydactyly, webbing of the toes, exostoses, abnormal shape of the long bones, shortening of the femoral neck, spina bifida, fusion of the cervical vertebrae, abnormal cervical vertebrae with small body, large spinous process, deformity of ears and deafness<sup>1-3</sup>. In our patient, great toes were found to be unusually short. Left side of the lower part of anterior chest wall was remarkably depressed from the birth. This type of congenital bony thoracic deformity is an unknown association of MOP. Acquired thoracic deformity as a part of heterotopic ossification would not be uncommon. In acute inflammatory stage such lesion may be mistaken as osteosarcoma as it is reported earlier<sup>8</sup>. We wanted to emphasize the association of congenital thoracic deformity with MOP and not the association of acquired thoracic deformity<sup>8</sup>.

In general, there is no cure for MOP. Further abnormal ossification is prevented by avoiding soft tissue injury and muscle damage. Trauma, intra-muscular injections and surgery are usually discouraged for the same reason. Current guidelines have classified drugs into 3 groups. Class I drugs include corticosteroids and non-steroidal anti-inflammatory agents for symptomatic relief of acute episodes. Class II drugs include leukotriene-inhibitors, mast-cell stabilizers and aminobisphosphonates. They have theoretical application to MOP and may be useful in selected cases. Thalidomide, VEGF trap and Noggin (pre-clinical) belongs to Class III drugs and at present they are experimental agents<sup>1</sup>.

#### Conflict of Interest : None

**Contribution :** SKG, SD and SS contributed in evaluation and management of the patient. MG contributed in drafting the article.

#### REFERENCES

- 1 Hughes A, Monsell F, Gargan M — Fibrodysplasia ossificans progressiva. *Current Orthopedics* 2008; 22: 48-51.
- 2 Sakthalkar VS, Dalvi RB, Pradhan MR, Colaço MP, Merchant RH — Myositis ossificans progressiva. Brief report of two cases. *Indian Pediatr* 1994; 31(11): 1413-5.
- 3 Urtizberea JA — Fibrodysplasia ossificans progressiva (FOP). Orphanet Encyclopedia. November 2003; <http://www.orpha.net/data/patho/GB/uk-fop.pdf> (accessed on 19th May 2011).
- 4 Smith R — Ectopic Mineralisation. In: David AW, Edward JB Jr., Timothy MC, Jhon DF editors — Oxford Textbook of Medicine. Vol III. 4<sup>th</sup> Edition: ELBS, 2004: 161-2.
- 5 Davidson J, Cleary AG, Bruce C — Inherited disorders of bones and joints. In: McIntosh N, Helms PJ, Smyth RL, Logan S editors — Forfar and Arneil's Text Book of Paediatrics. 7<sup>th</sup> Edition: Churchill Livingstone, 2008: 1400.
- 6 Magryta CJ, Kligora CJ, Temple HT, Malik RK — Clinical presentation of fibrodysplasia ossificans progressiva: Pitfalls in Diagnosis. *Journal of Pediatric Hematology/Oncology* 1999; 21(06): 549-43.
- 7 Scot C, Urban M, Arendse R, Dandara C, Beighton P — Fibrodysplasia ossificans progressiva in South Africa. Difficulties in Management in Developing Country. *J Clin Rheumatol* 2011; 17: 37-41.
- 8 Koob M, Durckel J, Dosch JC, Estz-Werle N, Diemann J — Intercostal myositis ossificans misdiagnosed as osteosarcoma in a 10-year-old child. *Pediatr Radiol* 2010; 40 (Suppl 1): S34-7.



## Case Report

### North American Blastomycosis in South Indian girl

Anjana Babu<sup>1</sup>, Pradeep S<sup>2</sup>, KR Leena Devi<sup>3</sup>, V Kesavan Nair<sup>4</sup>

We report the case of a 26 years old lady who presented with Lt upper lobe non-resolving pneumonia. Her bronchoscopic brushings yielded granulomas with necrosis and she was started on Anti Tuberculous treatment (ATT). But her symptoms persisted in spite of ATT with radiological worsening. A CT guided biopsy was taken which revealed the fungus *Blastomyces dermatitidis*. She improved with antifungal treatment. A high index of clinical suspicion, clinched the diagnosis. This case is being reported considering the rarity of the entity in Indian population.

[J Indian Med Assoc 2019; 117(9): 26 & 28]

**Key words :** Blastomycosis, granulomatous lesion, dimorphic fungus, consolidation.

**B**lastomycosis is a systemic pyogranulomatous infection that arises after inhalation of the conidia of the thermally *Blastomyces dermatitidis*. Most cases of blastomycosis have been reported from North America.

The clinical manifestations of blastomycosis are varied and include asymptomatic infection, acute or chronic pneumonia, and extrapulmonary disease. Although *B dermatitidis* has been reported to involve almost every organ, the lungs are the most common site of infection, followed by the skin, bones, and genitourinary system. Extrapulmonary disease results from hematogenous spread from a primary pulmonary infection.

#### CASE REPORT

A 26 years old lady presented with cough, high grade fever and weight loss since 3 weeks. She also had left sided pleuritic chest pain. There was no history of dyspnea. She was a Keralite residing in USA for the past 2 years. She had returned from USA 1 week back for attending a family function. There was no contact with pulmonary tuberculosis.

**Examinations** — On general examination she was febrile and was not toxic. Her respiratory system examination revealed coarse crepitations in left infraclavicular area. Laboratory investigations revealed leucocytosis which was polymorph predominant with high C-reactive protein. Sputum AFB repeated samples were negative. Her serological testing for HIV was negative. Peripheral smear showed leucocytosis with toxic granules. Her CT thorax revealed left upper lobe consolidation. Her sputum culture yielded normal flora. Blood culture showed no growth. She continued to have fever spikes inspite of broad spectrum antibiotics. We proceeded with bronchoscopic brushing, biopsy and bronchial washings. CB NAAT for mycobacterium in bronchial washings and sputum was negative. Bronchoscopic brushings yielded granulomas with necrosis. She was started on Antituberculosis treatment and was discharged. She

reported with recurrence of high fever. Hence she was evaluated again with CT guided biopsy. The biopsy tissue revealed the presence of dimorphic fungus suggestive of blastomycosis. She was initiated on itraconazole. She responded well to the treatment regimen and became symptomatically better within 2 weeks. She was given 6 months of itraconazole, the X-ray lesions disappeared and she was doing well 6 months after completion of drug therapy. Her repeat Chest X-ray showed remarkable clearance (Fig 1,2 & 3).

#### DISCUSSION

Blastomycosis is also known as North American Blastomycosis or Gilchrist disease<sup>1</sup>. It is endemic in North America. It causes clinical symptoms similar to tuberculosis. Blastomycosis is caused by dimorphic microfungus *blastomyces dermatitidis*<sup>2</sup>. It manifests with lung involvement in about 70% cases. Itraconazole is the treatment of choice. In Indian scenario though it has been diagnosed rarely the case reports have been few and far between. Most of the cases that have been reported were cutaneous Blastomycosis.

Our clinical and radiological scenario was strongly simulating tuberculosis as the patient presented with fever and upper lobe pneumonia. But the history of residing in North America made us suspicious. Leucocytosis with toxic granules and the non-response to antibiotics and ATT, suggested the



Fig 1—X-ray Chest before treatment



Fig 2 — X-ray Chest after 6 months of Itraconazole

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## Case Report

# Bilateral Scrotal Hydatid — a case report

R S Naik<sup>1</sup>, Sunil Kumar Jain<sup>2</sup>

Hydatid cyst is most commonly found in the liver and lungs, but cases have been reported of its occurrence in almost any part of the body. A rare case of hydatid cysts localized in both the scrotum in a 70 years old male is recorded here. So in cases of scrotal swelling the possibility of hydatid cyst may also be kept in view, particularly in such geographical areas where hydatid infections have been reported.

[J Indian Med Assoc 2019; 117(9): 27-8]

**Key words :** Bilateral Scrotal Hydatid, scrotal swelling.

Infection with *Echinococcus granulosus* is widely spread in India and has been reported in different parts of the country<sup>1</sup>. Hydatid cyst is most commonly found in liver and lungs but cases have sporadically been reported of its occurrence in various parts of the body viz kidney, spleen, retroperitoneal tissues, muscle & muscle sheath, subdural space, breast, uterus, omentum, brain, bones & rarely the orbit; but its location in the scrotum is almost an uncommon hospitable situation and curiously enough its bilaterality is not yet reported.

### CASE REPORT

A 70 years old man presented on 1st February, 2013 with the complaint of swelling in both the Scrotum and their size gradually increasing during the last three years duration. On presentation the size was found to be 18cm x 10cm on left side & 10 cm.x 8cm on right side, translucent & fluctuant, a clinical diagnosis of bilateral hydrocele was initially made. Further examination of the patient revealed a well built fit man with stable normal vitals. Lab. findings, Cardiovascular, per abd. exam & respiratory system exam did not reveal any abnormality.

Local examination revealed a bilateral scrotal swelling, left being comparatively larger 18cmx10cm, translucent, fluctuant, non-reducible and negative cough impulses. It was difficult to palpate the spermatic cord, swelling being located at the base of scrotum. However, testis on right side could be palpated at the lower pole being smaller in size. Clinically, the diagnosis of bilateral hydrocele was made and operation was planned for elective surgery.

Exploration of left sided scrotum revealed a unilocular thin sac containing whitish clear hyaline fluid over top of the testis, which was normal. Testis with epididymis was lying at the lower pole of the sac (Fig 1 & 2). After much of the fluid was evacuated following aspiration, the whole sac was excised in toto.

Right side exploration revealed similar findings and likewise was excised in toto without any difficulty. He had no anaphylactic reaction during surgery or after the removal.

Both the sacs were sent for histopathological examination which revealed them as Hydatid Cyst.

Subsequently, an USG of abdomen and chest x-ray did not reveal any intra abdominal/intra thoracic hydatid pathology.

### DISCUSSION

Hydatid cyst disease has been reported from Middle East, India, Africa, South America, New Zealand, Australia, Turkey & Southern Europe<sup>2</sup>.

Human beings become an accidental intermediate host through contaminated water or vegetables or through faeco-oral contact with infected persons<sup>3</sup>.

The egg reaches the human gastrointestinal tract, and some hours later breaks its membrane and hooks itself to the intestinal mucosa going through it and thereafter penetrating into the blood vessels to follow the portal venous system. One can explain the evolution if one considers that the embryo is the size of the leukocyte and has amoeboid movements. This is the most frequent occurrence, and thus the most frequent cysts are those of the liver (55-70%), being the first filter. It can also penetrate the intestinal lymphatic system, and through the thoracic duct it can enter the systemic circulation, avoiding the hepatic barrier<sup>4</sup>. That is why the lung is the second most frequent location (18-35%) being the second filter and simultaneously (5-13%) in both the locations<sup>2</sup>, but the hydatid cyst can develop in any organ & tissues, and a high index of suspicion of this disease is justified in reported region.



Fig 1 — Showing Lt sided (Partially evacuated) hydatid cyst excised in toto



Fig 2 — Showing right sided hydatid cyst



So far, only 4 isolated records of scrotal hydatid<sup>2-6</sup> have been reported. However, this case has singular importance due to bilaterality. The differential diagnosis of painless translucent and fluctuant intrascrotal swelling is largely hydrocele and rarely chylocele. However, because of the rarity of the lesion that too on either side, the presumptive diagnosis of bilateral hydrocele was made.

Exploration revealed whitish thin sac. The fluid of the hydatid cysts was crystal clear. Rupture of cyst often produces violent anaphylactic reaction. Thus, total excision of scrotal hydatid cyst is the treatment of choice specially, if there is no adhesion<sup>2</sup>.

#### CONCLUSION

A very rare case of Bilateral Scrotal Hydatid Cyst is reported to sensitize clinicians in general and surgeons in particular regarding its presence may be kept in view while dealing with the most common affliction of hydrocele.

#### REFERENCES

- 1 Naik RS, Naik V — Hydatid Cyst in sternomastoid muscle. *J Indian Med Assoc* 1982; **79**: 57-8.
- 2 Nashwan K. Mahjob — Hydatid Cyst in the Scrotum : a case report & review of literature. *Ann Coll Med Mosul* 2010; **36(1&2)**: 146-8.
- 3 Reales JA — Digest of a symposium on hydatidosis. *Int Surg* 1967; **47(4)**: 382-3.
- 4 Abdullah S, Omar F — An intrascrotal mass resulting from hydatid disease in an elderly patient. A case report. *T Klin J Med Sci* 2004; **24**: 289-90.
- 5 Kumar PV, Jahanshahi S — Hydatid cyst in the Testis : a case report. *J Urol* 1987; **137(3)**: 511-2.
- 6 Polat P, Kantarci M, Alper F, Suma S, Koruyucu MB, Okur A — Hydatid Cyst from head to toe. *J Radiographics* 2003; **23(2)**: 475-94.

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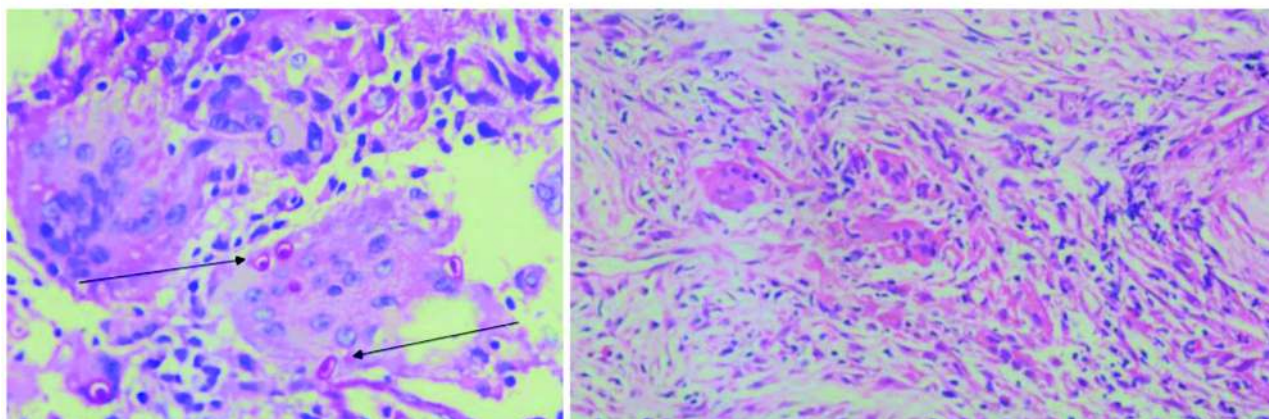


Fig 3 — Blastomyces – stained by H&E X 400 PAS, Fungus inside foreign body Giant cels

possibility of a fungal infection. The diagnosis was confirmed by histopathological report. Blastomycosis primarily affects otherwise healthy, vigorous people, mostly middle-aged, who acquire the disease while working or undertaking recreational activities in sites conventionally considered clean, healthy and in many cases beautiful<sup>3,4</sup>. After revealing the diagnosis, our patient gave history of visiting a park frequently near her residence.

Blastomycosis is one of those several infections which should be kept in mind while evaluating non-responsive cases of granulomatous lesions especially when there is residence or travel to North America.

#### REFERENCES

- 1 James, William D, Berger, Timothy G — *Andrews' Diseases of the Skin: clinical Dermatology*. Saunders Elsevier 2006; 319.
- 2 Kwon-Chung KJ, Bennett JE, Bennett John E — *Medical mycology*. Philadelphia: Lea & Febiger 1992; ISBN 978-0812114638.

- 3 Klein BS, Vergeront JM, Weeks RJ, Kumar UN, Mathai G, Varkey B, *et al* — Isolation of Blastomyces dermatitidis in Soil Associated with a Large Outbreak of Blastomycosis in Wisconsin. *N Engl J Med* 1986; **314(9)**: 529-34.
- 4 Rippon JW — *Medical mycology : the pathogenic fungi and the pathogenic actinomycetes* (3rd ed.). Philadelphia: W.B. Saunders Co. *Journal of Basic Microbiology* 1988; **30(6)**: 463.
- 5 Savio J, Muralidharan S, Macaden RS, D'Souza G, Mysore S, Ramachandran P, *et al* — Blastomycosis in a South Indian patient after visiting an endemic area in USA. *Medical Mycology* 2006; **44(6)**: 523-9.
- 6 Rao GR, Narayan BL, Durga Prasad BK, Amareswar A, Sridevi M, Raju B — Disseminated blastomycosis in a child with a brief review of the Indian literature. *IJDVL*: 2013; **79(1)**: 92-6.



## Case Report

# Scar endometriosis — a diagnostic dilemma

Vineet Mishra<sup>1</sup>, Ruchika Verneker<sup>2</sup>, Sumesh Choudhary<sup>3</sup>, Shaheen Hokabaj<sup>4</sup>, Priyankur Roy<sup>5</sup>

Scar endometriosis is a rare entity reported in 0.03-1.08% of women following obstetric or gynaecologic surgeries. It is often misdiagnosed as hernia, abscess, suture granuloma or lipoma with final diagnosis being made only after tissue excision and histopathology report. This is probably due to the long latent period between the surgery and the onset of symptoms. This delay in diagnosis causes delay in treatment causing unnecessary suffering to the patient.

A 34 years old lady Para 2 Live 2 presented with painful nodule at the scar site. She had undergone two emergency caesarean sections with laparoscopic tubal ligation done 5 years back. Her history signs and symptoms were suggestive of scar endometriosis as one of the differential diagnosis. Fine needle aspiration cytology (FNAC) report showed possibility of scar endometriosis but was inconclusive. Ultrasonography (USG) and magnetic resonance imaging (MRI) showed a second nodule at the paraumbilical region for which the patient was asymptomatic. Both nodules were adequately excised with 1 cm free margins. Final histopathology report confirmed scar endometriosis.

A painful lump at the scar site especially after obstetrics surgery should raise the suspicion of scar endometriosis. A proper preoperative workup with imaging modalities like USG and MRI is essential to assess the extent of the disease, and to plan a proper surgical approach. Once diagnosed, surgical treatment with wide excision is the treatment of choice. [J Indian Med Assoc 2019; 117(9): 29-30 & 32]

**Key words :** Caesarean section; endometriosis; MRI; scar; wide excision.

Endometriosis defined as presence of functional endometrial tissue at sites other than uterine cavity. Its estimated prevalence in the general population is up to 10%. For women with subfertility the prevalence rate ranges from 25% to 40%<sup>1</sup>. However, the prevalence is largely underestimated as visual inspection of the disease is required to confirm the diagnosis. The most common site is the pelvis, however extra pelvic endometriosis is a rare condition and can involve various organs right from the nervous system to the subcutaneous tissue. Incisional scar endometriosis is a rare entity reported in 0.03-1.08% of women following obstetric or gynaecologic surgeries<sup>2</sup>. It is often misdiagnosed as hernia, abscess, suture granuloma or lipoma with final diagnosis being made only after tissue excision and histopathology report. This delay in diagnosis in-turn causes delay in treatment resulting in unnecessary suffering to the patient.

We present a case of post caesarean scar endometriosis with review of its literature, so as to create awareness of the signs and symptoms and management of this rare condition among the medical fraternity.

### CASE REPORT

A 34 years old lady Para 2 Living 2 presented in our outpatient department (OPD) with chief complaints of a painful nodule on the left angle of the caesarean scar. She complained of incapacitating pain in the swelling which starts around 3 to 4 days before her expected date of menses and subsides once her menstruation is

completed. Patient had undergone two emergency caesarean sections—one 12 years back and another 7 years back. She had also undergone laparoscopic tubal ligation before 5 years. She noticed a small swelling at the left angle of the caesarean section scar 5 years back which was painful during menstruation. This swelling had gradually increase in size till date. However there was no history of any discoloration of the skin over the swelling. The pain in the swelling has increased over the last one year, for which she had to seek medical advice.

On abdominal examination, a firm nodule 2 x 2 cm was felt at the left angle of the caesarean section scar. The nodule was tender with restricted mobility. The skin overlying the nodule was free. There was no puckering or discoloration of the skin.

Her baseline investigations were done. Sonography showed a 1.9 x 1.2 cm diffuse nodule in the subcutaneous area in the left end of the caesarean scar. Another 1.5 x 0.9 cm nodule was present in the left para umbilical region but it was asymptomatic. Fine needle aspiration cytology (FNAC) of the nodule at the caesarean section scar showed possibility of endometriosis of abdominal wall. Magnetic resonance imaging (MRI) was done to assess the extent of the lesion, which showed a well-defined nodular soft tissue lesion in the left lower abdominal wall in the subcutaneous plane at the infraumbilical location abutting left rectus abdominis muscle with poorly defined fat planes. Similar smaller nodular lesion was seen in the paraumbilical region. There was no intraperitoneal extension of either of the lesions.

Patient was planned for wide local excision of both lesions. Surface marking was done for demarcating the extend of the lesion on Ultrasonography (USG). Intraoperatively, the overlying skin was incised. Fat was separated to reach the nodule. Bluish discoloration of the nodule was seen. Around 1 cm free margins were assured and the nodule excised along with the rectus sheath (Fig 1). There was no extension to the muscle. The second nodule

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was approached through the same incision. Bluish discoloration was seen below the rectus sheath (Fig 2). The rectus sheath was incised. The nodule was seen abutting the rectus abdominis muscle. The muscle was excised with sufficient free margins. Belly of the cut muscle was opposed followed by the closure of the rectus sheath at both sites. Skin closure was done with vertical mattress sutures. Corrugated drain was kept, which was removed on day 5.

Specimen was sent for histopathological examination which showed presence of endometrial glands and fibrosis (Fig 3). Post operatively patient was given GnRH agonist- injection Leupron 3.75 mg IM monthly for 3 months. Patient is on regular follow up with complete relief of pain at the scar site.

#### DISCUSSION

Scar endometriosis is a rare entity and most commonly encountered after surgery involving the uterus and the fallopian tube. The pathogenesis of scar endometriosis is complex and is



Fig 1 — Nodule excised at the left angle of the caesarean section scar, bluish discoloration of endometriotic lesion seen

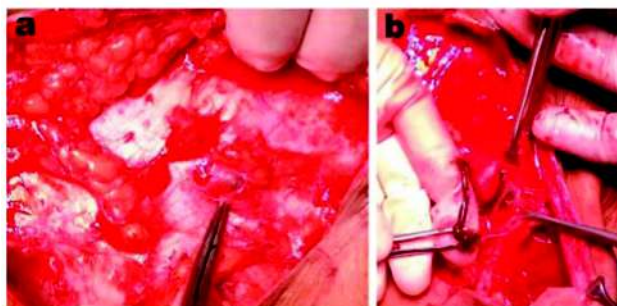


Fig 2 — (a) Nodule in paraumbilical region below rectus sheath  
(b) chocolate coloured material on incising the nodule

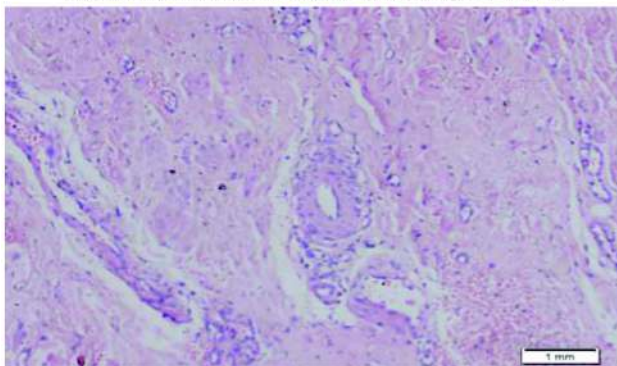


Fig 3 — Endometrial glands seen in the muscle tissue of the rectus abdominis muscle

believed to be the result of a mechanical iatrogenic implantation, through the direct inoculation of the abdominal fascia and/or subcutaneous tissue with endometrial cells during the surgical intervention, which, when stimulated by estrogen, become active and expand<sup>3</sup>. Incidence of scar endometriosis following hysterotomy is 1.08-2% whereas after cesarean section the incidence is 0.03-0.4%. The reason for higher incidence after hysterotomy has been postulated as the early decidua has more pluripotential capabilities and can result in cellular replication producing endometrioma<sup>4</sup>. There are reports of scar endometriosis along episiotomy site, in patients with tubal ligation, laparoscopic trocar tract, amniocentesis needle tract, and even after appendectomy<sup>4</sup>.

Surgical scar endometriosis is a rare and often misdiagnosed entity. This is probably due to the long latent period between the surgery and the onset of symptoms. In a series of 12 cases of scar endometriosis by Mustafa *et al* time interval between caesarean section and the onset of symptoms ranged from 16 months to 9 years<sup>5</sup>. In one case report by Cihangir *et al* the interval between the previous caesarean sections and symptoms was 23 years<sup>6</sup>. In our patient the interval between the caesarean section and the onset of symptoms was 2 years. The patient usually presents with mass at the surgical site, which is painful during menstruation. Pain in the endometriosis is classically described as cyclic pain but constant and non-cyclic pattern also have been reported<sup>7</sup>. Our patient typically had a nodule at the surgical site which was painful during menses and pain subsided after menses. Cyclical changes in the intensity of pain and size of the endometrial implants during menstruation are usually characteristic of classical endometriosis however, these symptoms may not be necessarily present in all cases<sup>8</sup>. Other presenting symptoms could be discoloration of the overlying skin and brownish discharge from the scar site. The scar is usually hypertrophic and tender on palpation.

Imaging plays an important role prior to surgery. In a retrospective study of 151 patients with abdominal wall endometriosis by Zhang and Liu, it was concluded that the preoperative USG detection rate was 97.4% (147/151 cases). However the lesion size detected by preoperative ultrasonography was significantly smaller than that measured intraoperatively by palpation and the results were statistically significant. The infiltration depth could be revealed only in 26.5% cases by preoperative USG<sup>9</sup>. The computerized tomography (CT) or magnetic resonance imaging (MRI) can further help us evaluate the extent of the lesion. However, MRI can be more helpful when the lesion is small because of its high spatial resolution, furthermore it performs better than CT scan in detecting the planes between muscles and abdominal subcutaneous tissue<sup>4</sup>. FNAC is reported to be accurate in diagnosing scar endometriosis however it is not always conclusive. It may be a useful guide in cases of large masses, doubtful diagnosis and atypical presentation. In our case FNAC showed possibility of scar endometriosis, but definitive diagnosis was not given.

Although rare there are cases reported in the literature showing malignant transformation to clear cell carcinoma in patients of scar endometriosis<sup>10</sup>. Hence in patients with recurrence, malignancy should be ruled out. An optimal surgery should be done once the diagnosis of scar endometriosis is made. Wide excision with at least 1 cm margin is considered as the treatment of choice and fascial defect may need closure with synthetic mesh if the underlying sheath is found to be involved<sup>7</sup>. Medical treatment with the use of progestogens, oral contraceptive pills and danazol is not effective

(Continued on page 32)



## Case Report

# Ecthyma gangrenosum over face of a diabetic patient : a rare case report

Vijaya Patil<sup>1</sup>, L S Patil<sup>2</sup>, Ashish Verma<sup>3</sup>

**Ecthyma gangrenosum is a rare condition observed in immunocompromised patients. It is caused by severe and invasive infection most commonly with *Pseudomonas aeruginosa* and rarely by *Klebsiella pneumoniae*. It has been related to life-threatening septicemia and high mortality.**

[J Indian Med Assoc 2019; 117(9): 31-2]

**Key words :** Ecthyma gangrenosum, diabetic ulcer, pseudomonas infection, cutaneous ulcer.

Ecthyma gangrenosum is a rare invasive cutaneous infection caused by *Pseudomonas aeruginosa*, most commonly seen in immunocompromised patients, autoimmune disorders, patients with underlying malignancy<sup>1</sup>. It is usually associated with *Pseudomonas* bacteremia and life threatening septicemia<sup>2</sup>. It is also caused by certain fungi and other bacteria such as *Proteus*, *E coli*, *Klebsiella*. Presence of Ecthyma Gangrenosum in a healthy patient may demand for thorough work up for immunodeficiency and underlying malignancy that may result in fatal outcome<sup>4</sup>. Neutropenia, septic shock, abdominal sepsis, diabetes, malignancy, resistant microorganisms are poor markers associated with Ecthyma Gangrenosum<sup>4</sup>. So high index of suspicion, early diagnosis, thorough immunological evaluation and aggressive treatment can result in reduced mortality rate and better prognosis.

### CASE REPORT

A 75 year old male, presented to the hospital with altered sensorium, responding to oral commands and deep painful stimulus. Patient had red macular and papular lesions over nose, cheeks, oral cavity and scalp (Figs 1&2). His blood sugar was 400 mg/dl, with normal vitals.

Patient was resuscitated and admitted in intensive care unit and was thoroughly investigated. His haemoglobin was 4.5 gm%; total count – 13,000 cells/cumm; differential count – neutrophil 82%, lymphocytes 14%, eosinophils 3%, and monocytes 1%; ESR – 110 mm after 1 hour; blood urea – 113 mg/dl; serum creatinine – 3.6 mg/dl; urine examination showed presence of ketone bodies. His fundus examination showed proliferative diabetic retinopathy.

Patient was started on insulin drip and broad spectrum intravenous antibiotics. Patient developed similar skin lesions over arms and popliteal fossa. Over a period of few days the red macules progressed to form vesicles and the pustules, which then ruptured to form gangrenous ulcers with a dark eschar surrounded by a halo.

Culture of the discharge and blood, and biopsy from the edge of the ulcer were sent. Histological examination showed necrotic haemorrhagic vasculitis with gram negative rods in the medial and adventitial walls of blood vessels, with sparing of intima. Pus culture

revealed growth of *Pseudomonas aeruginosa*. Blood culture was sterile.

Antibiotics were changed according to sensitivity report, and the necrotic lesion was surgically debrided, followed by regular dressings. The lesions resolved over a 3 week period following glycaemic control.

### DISCUSSION

Ecthyma gangrenosum is a characteristic

cutaneous manifestation of severe and invasive infection caused by *Pseudomonas aeruginosa*, and rarely by *Klebsiella pneumoniae* and other *Pseudomonas* species, eg, *Pseudomonas maltophilia*, *Pseudomonas burkholderia (cepacia)*<sup>1</sup>. It occurs in 30% of patients with *Pseudomonas aeruginosa* septicemia<sup>2</sup>, but rarely it develops without bacteremia.

It had been considered to be pathognomonic of pseudomonas sepsis until it was described in cases of infections by Group A *Streptococcus*, *Aeromonas hydrophila*, *Staphylococcus aureus*, *Serratia marcescens*, *Citrobacter freundii* and *Escherichia coli*<sup>3</sup>. Ecthyma gangrenosum lesions characteristically begin as painless red macules that evolve into papules and later into haemorrhagic bullae. These ruptures produce gangrenous ulcers with a grey-black eschar. In classical bacteraemic ecthyma gangrenosum, the lesions are a blood-borne metastatic seeding of the pathogens to the skin.

However, there are several reports that describe ecthyma gangrenosum unaccompanied by bacteraemia or systemic infection<sup>4,5</sup>. The absence of bacteraemia is associated with the best outcome.

Dissolution of the elastic lamina of the blood vessels by *Pseudomonas* elastase allows for liberation of the bacilli into the subcutaneous tissues<sup>6</sup>. Further prolific multiplication of the



Fig 1 — Lesions over the face

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Fig 2 — Lesions over scalp (after clipping the hairs)

organism in the subjacent tissue with elaboration of endotoxin A and proteases leads to the ulcerative lesion which is characterized by haemorrhage, encircled by a rim of reactive erythema<sup>7</sup>.

Condition may mimic pyoderma gangrenosum, necrotizing vasculitis or cryoglobulinemia, from which it

should be differentiated to start early and effective treatment.

Treatment should include prompt recognition of the skin lesion, appropriate antibiotic therapy for *Pseudomonas aeruginosa*, and surgical debridement. Clinicians should be aware of the skin manifestations of ecthyma gangrenosum to avoid fatal septicemia in

immunocompromised patients.

#### REFERENCES

- 1 Song WK, Kim YC, Park HJ, Cinn YW — Ecthyma gangrenosum without bacteraemia in a leukemic patient. *Clin Exp Dermatol* 2001; **26**: 395-7.
- 2 Droff GJ, Gliemer NF, Rosenthal DR, Rytel MW — *Pseudomonas* septicaemia: Illustrated evolution of its skin lesion. *Arch Int Med* 1971; **128**(4): 591-5.
- 3 Reich HL, Fadeyi DW, Naik NS, Honig PJ, Yan AC — Nonpseudomonal ecthyma gangrenosum. *J Am Acad Dermatol* 2004; **50**(5 Suppl): S114-7.
- 4 Wolf JE, Liu HH, Rabinowitz LG — Ecthyma gangrenosum in the absence of *Pseudomonas* bacteremia in a bone marrow transplant recipient. *Am J Med* 1989; **87**: 595-7.
- 5 Singh N, Devi M, Devi S — Ecthyma gangrenosum: a rare cutaneous manifestation caused by *Pseudomonas aeruginosa* without bacteremia in a leukemic patient. *Ind J Dermatol Venereol Leprol* 2005; **71**: 128-9.
- 6 Mull JD, Callahan WS — The role of the elastase of *Pseudomonas aeruginosa* in experimental infection. *Exp Mol Pathol* 1995; **4**: 567-75.
- 7 Bottone EJ, Reitano M, Janda JM, Troy K, Cuttner J — *Pseudomonas maltophilia* exoenzyme activity as correlate in pathogenesis of ecthyma gangrenosum. *J Clin Microbiol* 1986; **24**: 995-7.

(Continued from page 30)

and gives only partial relief in symptoms. Gonadotrophin agonist has shown prompt improvement in symptoms but no change in the lesion size was noted. Usually recurrence is seen after cessation of the treatment and hence surgical treatment is the treatment of choice<sup>4,7</sup>.

Simple preventive measures at the end of the caesarean section, like thorough cleaning of the abdominal wound and vigorous irrigation by saline solution before closure can decrease the amount of endometrial inoculation. The suture material used for uterine closure should not be used for the closure of the abdominal wound<sup>11</sup>.

#### CONCLUSION

A painful lump at the scar site especially after obstetrics surgery should raise the suspicion of scar endometriosis. A proper preoperative workup with imaging modalities like USG and MRI are essential to assess the extent of the disease, and to plan a proper surgical approach. The time interval between the index surgery and the appearance of symptoms can vary from months to years. Hence scar endometriosis should always be one of the differential diagnosis for painful nodule at the scar site. Once diagnosed, surgical treatment with wide excision is the treatment of choice.

#### REFERENCES

- 1 Brown J, Farquhar C, Dias S — Endometriosis: an overview of Cochrane Reviews. *Cochrane Database of Systematic Reviews* 2012; 1.
- 2 Biswas BK, Gupta N, Magon N — Incisional endometriosis: A rare cause for a painful scar - A report and commentary. *Nigerian medical journal: Journal of the Nigeria Medical Association* 2012; **53**(4): 257-9.
- 3 Khachani I, Adib AF, Beza R — Cesarean Scar Endometriosis: An Uncommon Surgical Complication on the

Rise? Case Report and Literature Review. *Case Reports in Obstetrics and Gynecology* 2017; ID 8062924: 4 pages.

- 4 Gupta P, Gupta S — Scar Endometriosis: Case Report with Literature Review. *Nepal Journal of Obstetrics and Gynaecology* 2014; **9**(2): 55-7.
- 5 Uçar MG, Panlykan F, Göçmen A — Surgical Treatment of Scar Endometriosis Following Cesarean Section, a Series of 12 Cases. *The Indian Journal of Surgery* 2015; **77**(2): 682-86.
- 6 Uzunçakmak C, Güldağ A, Özçam H, Dinç K — Scar Endometriosis: A Case Report of This Uncommon Entity and Review of the Literature. *Case Reports in Obstetrics and Gynecology* 2013; ID 386783: 4 pages.
- 7 Goel P, Devi L, Tandon R, Saha PK, Dalal A — Scar endometriosis – A series of six patients. *Int J Surg* 2011; **9**: 39-40.
- 8 Danielpour PJ, Layke JC, Durie N, Glickman LT — Scar endometriosis – a rare cause for a painful scar: A case report and review of the literature. *Can J plast Surg* 2010; **18**(1): 19-20.
- 9 Zhang J, Liu X — Clinicopathological features of endometriosis in abdominal wall—clinical analysis of 151 cases. *Clinical and Experimental Obstetrics and Gynecology* 2016; **43**(3): 379-83.
- 10 Ferrandina G, Palluzzi E, Fanfani F, Gentileschi S, Valentini AL, Mattoli MV, et al — Endometriosis-associated clear cell carcinoma arising in caesarean section scar: a case report and review of the literature. *World J Surg Oncol* 2016; **14**(1): 300.
- 11 Teng CC, Yang HM, Chen KF, Yang CJ, Chen LS, Kuo CL — Abdominal wall endometriosis: an overlooked but possibly preventable complication. *Taiwan J Obstet Gynecol* 2008; **47**(1): 42-8.



## Case Report

# A rare case of secondary small bowel volvulus due to twisted ovarian cyst

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Sabyasachi Sarkar<sup>3</sup>, Sibaji Dasgupta<sup>4</sup>

Small gut volvulus is a life threatening surgical emergency. Small gut volvulus is an uncommon entity, uncommoner still is a small gut volvulus with a secondary cause. We present the rare case of a secondary small gut volvulus due to a twisted ovarian cyst in a 50 year old woman.

[J Indian Med Assoc 2019; 117(9): 33-4]

**Key words :** Intestinal obstruction, small bowel volvulus, twisted ovarian cyst.

**V**olvulus describes the condition in which the bowel becomes twisted on its mesenteric axis a situation that results in partial or complete obstruction of the bowel lumen and a variable degree of impairment of its blood supply<sup>1</sup>. The clinical presentation is that of an acute abdomen<sup>2</sup>. The aetiology may be primary or secondary, where other predisposing factors initiate the volvulus<sup>3</sup>.

In Western countries above 86% of small bowel volvulus are of secondary type<sup>2</sup>, but in Africa, Asia, including Indian subcontinent, majority of small bowel volvulus are of primary type<sup>3</sup>. Though various causes for secondary small bowel volvulus have been reported, no case has been reported till date in adults where small bowel volvulus is secondary to twisted ovarian cyst.

### CASE REPORT

A 50 year old post menopausal 3rd gravida female presented at the emergency of the hospital with history of pain abdomen for last 36 hours. The pain was sudden in onset, initially colicky, localized at the lower abdomen, which later became continuous and generalized. The patient had history of obstipation for last 24 hours. The patient had a few episodes of bilious vomiting. There was no other significant complaint. The patient had no past history of medical illness or surgical intervention.

**Examination** — There was mild pallor, temperature was not raised, pulse rate was 98/min and BP 110/72 mmHg. Abdominal examination revealed distended tympanic abdomen. Generalized abdominal tenderness was present but rebound tenderness was absent. No obvious lump was palpable on abdominal palpation. Per-rectal examination revealed an empty rectum with ballooning.

**Investigations** — A straight X-Ray abdomen was done in erect



Fig 1 — Straight X-ray abdomen

posture which revealed gas filled bowel loops with multiple air fluid levels (Fig 1). A provisional diagnosis of acute intestinal obstruction was made and emergency laparotomy was performed.

**Intervention** — Abdomen was opened through mid line vertical incision under general anaesthesia. The small bowel loops were grossly dilated. A plum colored right side twisted ovarian cyst was seen around whose pedicle a portion of terminal ileum had twisted clockwise one and half turns resulting in secondary small bowel volvulus. The attempt to derotate the gut was unsuccessful initially.

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A right salpingo-oophorectomy was done after which derotation of gut was possible. The rotated ileum was viable, though inflamed, and hence no further surgery was done. The salpingo-oophorectomy specimen was sent for HPE. The abdomen was closed as per routine (Fig 2).

#### Follow up —

Postoperative period was uneventful. The HPE revealed cystadenoma of right ovary.

#### DISCUSSION

Small bowel volvulus is a rare entity. Mortality in various studies is 10-35%<sup>3</sup>. Incidence of small bowel volvulus varies from 1.7-5.7/1,00,000 population in Western countries compared to 24-60/1,00,000 population in Africa and Asia, primary volvulus being more common there<sup>3</sup>.

Secondary small bowel volvulus may develop as a result of various congenital and acquired predisposing factors<sup>2</sup>. The most frequently related conditions are bands, adhesions, Meckel's diverticulum, internal hernia and pregnancy. Other associations that have been reported include ileal atresia, Meconium ileus, leiomyoma of the mesentery, enterointerostomy and following operation, particularly gastrectomy, gastrectomy and total hip replacement<sup>3</sup>.

Secondary small bowel volvulus is uncommon in those < 40 years of age with a peak incidence in the 6th and 8th decade. The reported patient was in her 5<sup>th</sup> decade. Though the reported case was of a female, yet males predominate in both primary and secondary volvulus<sup>3</sup>.

Twisting of pedicle is commoner in right sided ovarian cyst<sup>4</sup>. No case of secondary small bowel volvulus due to twisted ovarian cyst has been reported in adults till date. However, there are 19 reported cases of neonatal ovarian cysts resulting in bowel obstruction. Two mechanisms exist for bowel obstruction, adhesions caused by torsed necrotic ovary and mass effect of a large ovarian cyst<sup>5</sup>. Ovarian cancer can cause small bowel obstruction but the pathogenesis of obstruction is totally different from that of small bowel volvulus<sup>6</sup>.

A case of colonic stricture secondary to torsion of an ovarian cyst has been reported in a newborn born at 41 weeks of gestation after a normal pregnancy and delivery. The left fimbria and ovary twisted around the sigmoid colon causing colonic obstruction<sup>7</sup>. Another case of acute intestinal obstruction caused by twisted



Fig 2 — Intraoperative finding

ovarian cyst has been reported in a 7th para African adult woman; the obstruction was caused by reflex nervous paralysis of the lower part of the gut due to twisting of ovarian pedicle<sup>8</sup>.

#### CONCLUSION

Secondary small bowel volvulus is itself a rare cause of acute intestinal obstruction. Though reported in neonates, no case of secondary small bowel volvulus due to twisted ovarian cyst in adults has been reported till date. The mechanism in this case is very similar to that of a band, where the twisted pedicle acted as the precipitating cause. This case had a favorable outcome due to early intervention.

#### REFERENCES

- 1 Townsend Jr, Courtney M — Sabiston's Textbook of Surgery, 17th Ed, Board Review, 2 Nov 2004, Vol. 2; Pg 1422.
- 2 Roggo A, Ottinger LW — Acute Small Bowel Volvulus in adults. A sporadic form of strangulating intestinal obstruction. *Ann Surg* 1992; **216** (2): 135-41.
- 3 Iwuaghou O, Deans GT — Small bowel volvulus — A Review. *J B Coll Surg Edinb* 1999; **44**(3): 150-5.
- 4 Ovarian Torsion in emergency medicine: eMedicine: Emedicine, eMedicine. Medscape.com/article/795994 — overview; 18th Feb, 2010. (assessed 22nd March 2011).
- 5 Jeanty C, Frayer EA, Page R, Langenburg S — Neonatal ovarian torsion complicated by intestinal obstruction and perforation and review of the literature. *Journal of Pediatric Surgery* 2010; **45**(6): e5-e9.
- 6 Reenam J — Surgery for bowel obstruction in ovarian cancer. *Virtual Mentor* 2004; **6**(10):
- 7 Karmazyn B, Steinberg R, Zir N, Zer M, Horev G — Colonic stricture secondary to torsion of an ovarian cyst. *Pediatr Radiol* 2002; **32**: 25-7.
- 8 Navin SJ — Acute intestinal obstruction caused by twisted ovarian cyst. *Br. Med J* 1941; **1**(4198): 930.
- 9 Katis PG, Dias SM — Volvulus: A rare twist in small-bowel obstruction. *CMAJ* 2004; **171**(7): 728.



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