



SCROTAL ABDOMEN IS NOT OBSOLETE' - NUANCES IN TREATMENT

General Surgery

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ABSTRACT

Background: Inguinoscrotal hernias especially very large ones are hard to come by these days due to awareness and the urge to seek medical help early itself. But still few skip the radar harbouring huge hernias dubbed as 'Scrotal Abdomen'. The aim of this study is to discuss the management of them. **Materials and Methods:** This was a retrospective study of adult males age >18 years who had been diagnosed with large inguinoscrotal hernias over a 3-year period between June 2020 to June 2023 with a minimum follow up period of 6 months. The age, presenting symptoms, side of the hernia, interval between symptom and presentation, operative procedure performed, contents of the hernia sac and post-operative complications were assessed. **Results:** A total of 21 cases of inguinal hernia repairs were undertaken during the study period. Out of this number, 13 were taken as elective cases, 3 as emergency cases and 4 as semi-emergency cases. Extensive preoperative evaluation was done especially cardiopulmonary fitness. In most of the cases preoperatively the capacity of abdominal cavity increased by creating pneumoperitoneum gradually. Hernioplasty was performed in 10 cases while Herniorrhaphy was done in 3 cases and a combined Herniorrhaphy with Hernioplasty in 7 cases. Respiratory Distress was the most common post-operative complication which was managed effectively. There was one mortality. **Conclusion:** Large Inguino-scrotal hernias may not be a common entity but they pose a significant challenge in management. We still require more understanding of this complex entity to give effective results with least side effects.

KEYWORDS

Inguinoscrotal hernias; Scrotal abdomen; Hernial contents; Herniorrhaphy; Hernioplasty.

INTRODUCTION:

Groin hernias are a common entity in surgical practice with much higher percentage occurring in men than women. Approximately 75% of abdominal wall hernias occur in the groin. The lifetime prevalence of groin hernias is 27% in men and 3% in women (1) The frequency of groin hernia repair rises from 0.25% in patients 18 years of age to 4.2% in patients 75 to 80 years of age (2). But some Inguinal hernia patients present with considerable delay in reporting to a health care professional.

Giant scrotal hernias represent 2.7% of all inguinal hernias (3). Patients in low resource countries are affected on average in the fourth decade of life who are the breadwinners of the family. The poor quality of life seen in all age groups means that scrotal hernias need to be operated on priority. Scrotal hernia patients had higher age, higher Anesthesia risk score, larger defects and more risk factors than non-scrotal hernia patients. Usually, they are painless with localized discomfort may develop from stretching of the tissue at or around the site of the hernial defect or a drag on the mesentery or omentum. Abdominal distension with obstipation suggests obstruction of hernia while severe pain could suggest that the hernia has become strangulated and may require emergent surgical intervention. However, most of the scrotal abdomen hernias are asymptomatic hernias and that's why patients keep them for months sometimes years together. This article embarks on the journey to how to tackle these large inguinoscrotal hernias.

MATERIALS AND METHODS:

We collected the data of all large male Inguinal hernia patients who reported to our hospital over the past three years from 2020 to 2023 retrospectively and analysed the data. Ethical committee clearance was taken to

2. Recurrent hernias
3. Previously treated at another centre.

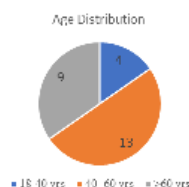
Standard examination was carried out by an expert surgeon. During the entire period patients were properly evaluated and recorded by photography systematically for comparison in future. In total there were 21 male patients who were identified as having large Inguino scrotal hernias. They had undergone thorough clinical examination, imaging and other work up wherever necessary. The patients were subjected to surgery either as an emergent operation if it was obstructed or a strong suspicion of strangulation. Otherwise, the patients were taken as an elective procedure if it was an uncomplicated Inguinal hernia after preoperative pneumoperitoneum creation over a period of 7-10 days.

After inguinal exploration, hernial sac was identified; hernial sac was opened first to look for the contents. During surgical exploration once contents were identified, omentectomy was done wherever it was there and hernial sac was dissected up to the deep ring. It was then transfixed, ligated and divided at deep ring and rest of the sac was removed. The posterior wall of the Inguinal canal was strengthened by in either of the two ways; herniorrhaphy in emergency situation and hernioplasty by using a polypropylene mesh in elective scenarios. The patients had a postoperative hospital stay on a case-to-case basis which varied. All the patients were followed up regularly for a minimum of 6 months post intervention to record and address any complications. Statistical analysis was performed using SPSS, version 18.0 software

RESULTS:

Total Patients: 21

Age Distribution: Figure 1



Inclusion Criteria:

Patients attending surgical OPD who are:

1. 18 years or more
2. Only male Inguinal hernia patients

Exclusion Criteria:

1. Below 18 years

Median age of the patients is 53 years
Interval between presentation and surgery 8.5 days
The mean duration of hospital stay is 17 days

Symptoms:

Groin Swelling without pain : 18
Groin swelling with pain: 3

Symptoms Duration: (Figures 2-4, showing various scrotal hernias)
These patients had significant delay from the beginning of symptoms till accessing healthcare.

- 1 month to 6 months – 1 patient
- 6 months to 1 year – 2 patients
- 1 year to 5 years – 6 patients
- 5 to 10 years – 7 patients
- >10 years – 5 patients.

Table 1 - Type of Swelling on examination:

S.No.	Swelling Type	Number of cases
1	Inguinal swelling, reducible	2
2	Inguinal swelling, irreducible	13
3	Inguinal swelling, obstructed	2
4	Inguinal swelling, strangulated	1
5	Bilateral inguinoscrotal hernia, Irreducible	3
	Total	21

Type of Intervention:

- Emergency procedures-3
- Elective procedures -13
- Semi emergency -4
- Conservative - 1

We took the irreducible cases with pain as semi emergency and operated on priority basis. One of the patients who was 72 years old with giant inguinoscrotal swelling that was present bilaterally till the knee had several comorbidities, the most significant was Chronic Obstructive Pulmonary Disease (COPD) and poor cardiac status with an ejection fraction of just 23%. So we decided against surgery and advised him just conservation. (Figure 5)



Figure 2: Right Sided Large inguinoscrotal hernia



Figure 3: A right sided hernia in a 60 yr old



Figure 4: A patient with a combined Inguinal and paraumbilical hernia: Operated with positive outcome



Figure 5: A 72 yrs old with poor Respiratory condition and low ejection fraction – Had to be managed conservatively (S3 type)

Table 2- Content of the hernia:

Content	Number	Percentage
Omentum alone	4	20%
Small bowel alone	7	35%
Large bowel alone	2	10%
Omentum + Bowel	7	35%
total	20	100%

Table 3 – Type of hernia repair done:

Content	Number	Percentage
Herniorraphy	3	14.2%
Hernioplasty	10	47.6%
Combined approach with Kuntz Procedure	3	14.2%
Combined approach with Orchidectomy	4	19%
Conservative	1	4.7%
Total	21	100%

In three cases, Kuntz procedure where the spermatic cord is excised without orchidectomy to facilitate repair of weak inguinal canal wall and mesh repair was done. In seven cases of elective procedure, we resorted to a combination of both herniorraphy and a mesh repair due to a very weak posterior inguinal canal wall (Figures 6-10).



Figure 6: Hernioplasty after Kuntz procedure



Figure 7: Patient who presented with Obstruction



Figure 8: Large hernial sac dissected in the scrotum



Figure 9: Sac opened and contents reduced



Figure 10: Hernioplasty was performed as there was dirty fluid in the sac and inguinal canal. Congested bowel recovered on warm saline and high flow oxygen.

DISCUSSION:

Large Inguinoscrotal hernia dubbed as '*Scrotal abdomen*' where a large portion of the abdominal contents lie in the scrotum due to long term neglect is a rare entity. But in India even with rising literacy rates, improving socioeconomic status, access to health care better than ever in history we still have a segment of people who are hesitant to approach doctors due to fear of Surgery while some are neglected and unable to afford the cost of treatment. Scrotal Abdomen is not only a disease it's a syndrome that requires expert care. Organised Data on large inguinoscrotal hernias are comparatively less, one reason might be the low incidence but also due to inadequate reporting of these entities as they are scattered across geographically. The limited knowledge we have is from few case reports from various parts of the world especially Southeast Asia. As ours being a tertiary care hospital draining a large rural area and a referral centre, we received patients over three years to establish this data with a minimum follow up of six months. We had a total of 21 large inguinoscrotal hernias out of which three were obstructed hernia and one strangulated hernia.

There has been varied classification systems proposed for scrotal hernias but we are describing a simplified, pragmatic, and clinically based classification system for scrotal hernia. Scrotal hernia is defined as an inguinal hernia which has descended into and causes any distortion of the scrotum. It is suggested to imply Scrotal Hernia with an S and this in turn subdivided into S1 (upper third thigh), S2 (middle third thigh) and S3 (lower third thigh/patellar) (4). Giant Inguinoscrotal hernias are those crossing below the mid-inner thigh (5). No radiological imaging is required for standard inguinal hernias including reducible scrotal hernias. Ultrasound can differentiate the contents. However, CT scan or MRI is beneficial in cases with giant scrotal hernias to assess the nature of the herniated content if needed (6,7). Right sided scrotal hernias usually contain omentum or small bowel while left sided scrotal hernias often present with colon herniation, usually a sliding type of hernia.

The possibility of incarceration of hernia is low, ranging from 0.3% to 3% per year, but in the long term there might be chances of obstruction, strangulation and perforation of its content (8). Due to life threatening complications sometimes surgeons may advocate against surgical intervention (9). Patients even though experience difficulties such as walking, sitting, and performing daily activities, they do not seek treatment due to fear of surgery, access and affordability. The omentum, small bowel, mesentery, caecum, colon, and bladder are all possible contents of a hernia sac (10,11). Due to the above-mentioned complications, it is better to discuss the risk-benefit ratio with the patient and operate for a better quality of living. Out of the 21 patients in our study one of the patient presented with strangulation, even though we resected the two feet of gangrenous small bowel, he had

protracted ICU stay and we lost the fight to sepsis.

Because of the slow development of these giant inguinoscrotal hernias, the abdominal cavity becomes empty and loses capacity, causing a severe rise in pressure in the abdominal and intrathoracic cavities on sudden replacement of the contents into the abdomen (10). This requires a careful preoperative planning so that the dreaded complications of abdominal compartment syndromes after reduction of contents or respiratory compromise post-surgery should be prevented. Other complications are also high like increased risks of bleeding, seroma, paralytic ileus, bladder or bowel injury/ anastomotic leak, infection and recurrence were reported. The most difficult part of surgery is difficulty in reduction, so we have to pre-empt and prepare the patient by increasing the abdominal cavity space by a combination of techniques like keeping the patient in Trendelenburg position for few days, creating pneumoperitoneum on a daily basis till the surgeon feels it might be adequate to accommodate the replaced viscera. Various techniques such as preoperative progressive pneumoperitoneum (PPP), it was introduced in 1940 by Moreno. The technique includes the percutaneous placement of an intra-abdominal catheter and progressive insufflation of 1–2 L of air for a period of 10–15 days (12). The other method is debulking of abdominal contents with visceral resections. We always performed omentectomy in all our patients.

Surgery of large inguinoscrotal hernias have high morbidity and a high level of expertise is required to treat them. Factors like irreducibility, recurrence, S2 and S3 (Giant), lower ASA grades, and patient general condition increased the complexity of the surgery. Some of the irreducible scrotal hernias reduce after induction of anaesthesia. Then they can then be treated as reduced hernias. Irreducibility (during start of procedure) increases the operation time (13, 14) and is usually associated with increased complexity. Kuntz procedure and Orchidectomy may be considered for complex scrotal hernia with a prior informed consent process. In emergency situations there was always dirty fluid in the sac and the it was not advisable to keep a mesh as the chances of infection and mesh extrusion are high. So, we resorted to Hernioplasty after weighing the risk benefit ratio. In several studies, procedures, such as hemi or subtotal colectomies, resection of the mesentery and small bowel resections have been carried out (15–18). An uncomplicated giant hernia should be managed after thorough preoperative workup especially cardiopulmonary assessment, however in emergency explorations when we don't have the buffer for preparation, the risk of morbidity and mortality are high.

CONCLUSION:

The best way to treat scrotal abdomen is education of the masses and preventing it in the first place and making health care accessible, so the patients can be treated at an early stage. Inguinal hernias even small ones require meticulous repair while large inguinoscrotal hernias summons the best of anatomical knowledge of the surgeon. For a successful outcome a careful preoperative preparation, precise repair and a vigilant postoperative care is the need of the hour.

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