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# Surprises Encountered During Exploration of Inguinal and Femoral Hernia: A Case Series and Literature Review

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**Introduction**

Inguinal hernia repair is one of the commonly performed procedures in surgical practice. In spite of its great incidence, it often poses a surgical dilemma, even for the skilled surgeon because of its unusual contents seen infrequently.

Unusual hernial contents may include ovary, fallopian tube, vermiform appendix and acute appendicitis (Amyand's hernia). Also many pathologic entities can masquerade as inguinal hernia. It is important to be prepared to detect them and take the appropriate surgical decisions.

Information was obtained from their medical records and the documented operative findings.

**Objectives**

To present our experience with inguinal hernia, common sites, age and gender based distribution and unexpected findings during hernia surgery, either unusual hernial contents or pathologic entities, like persistent mullerian duct, masquerading as a hernia.

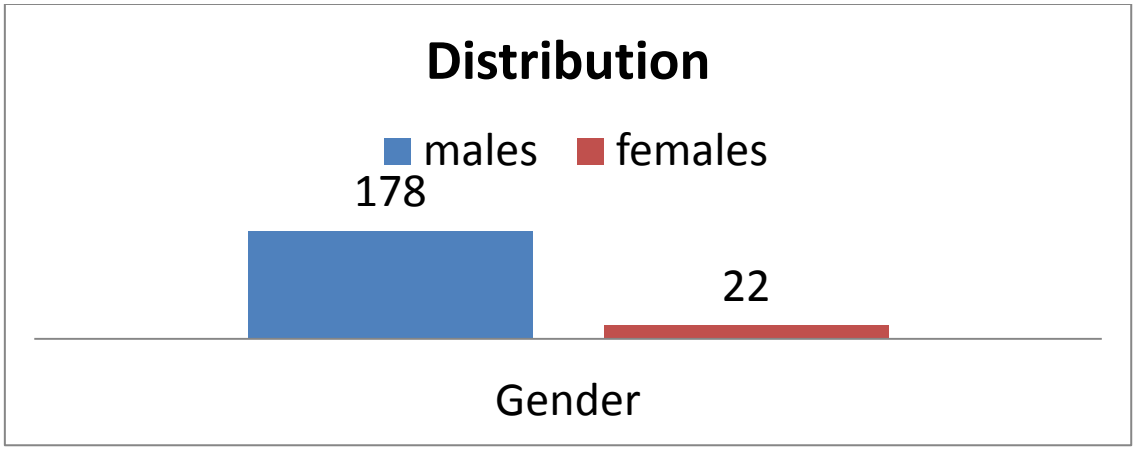
**Materials and methods**

An analysis of all patients admitted under general surgical wards at R L Jalappa hospital and research Centre, Kolar, for complaints of inguinal hernia.

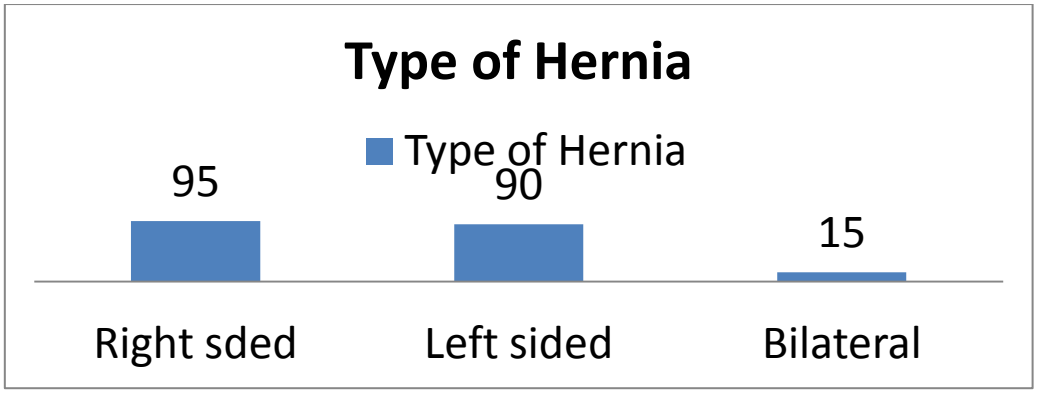
**Results**

A total of 200 cases of inguinal hernia were operated during the study period, 178 males comprised the population, 22 were females.

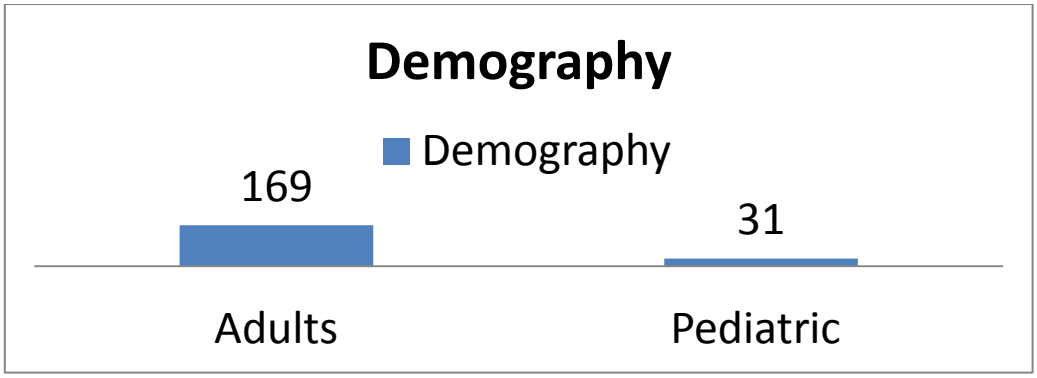
| | |
|---|---|
| TOTAL NUMBER OF CASES | 200 |
| Amyand 's hernia | 12 |
| PMDS | 2 |
| Acute appendicitis as content in left inguinal hernia | 2 |
| Sliding inguinal hernia | 8 |
| Meckel's diverticulum as content | 11 |
| Obstructed femoral hernia with ovary as content | 1 |



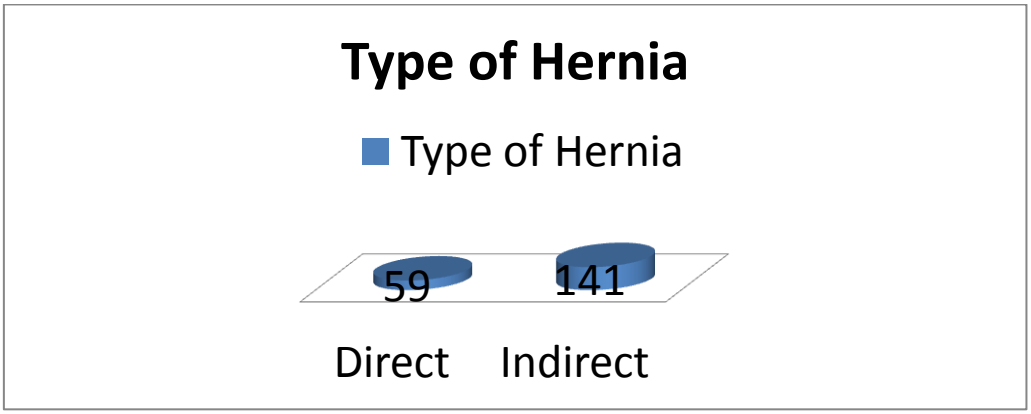

Right sided inguinal hernias were more frequently encountered, bilateral herniae were seen in 15 patients.



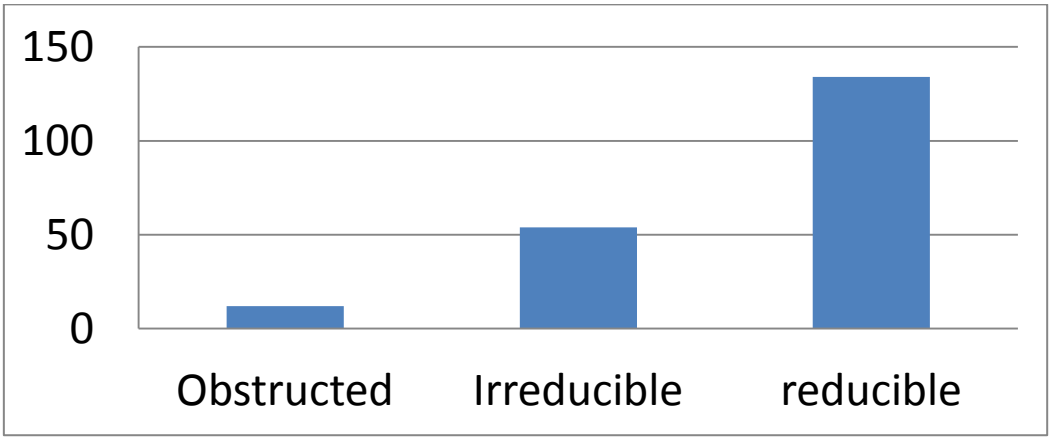

A total of 31 patients were encountered in the pediatric group.



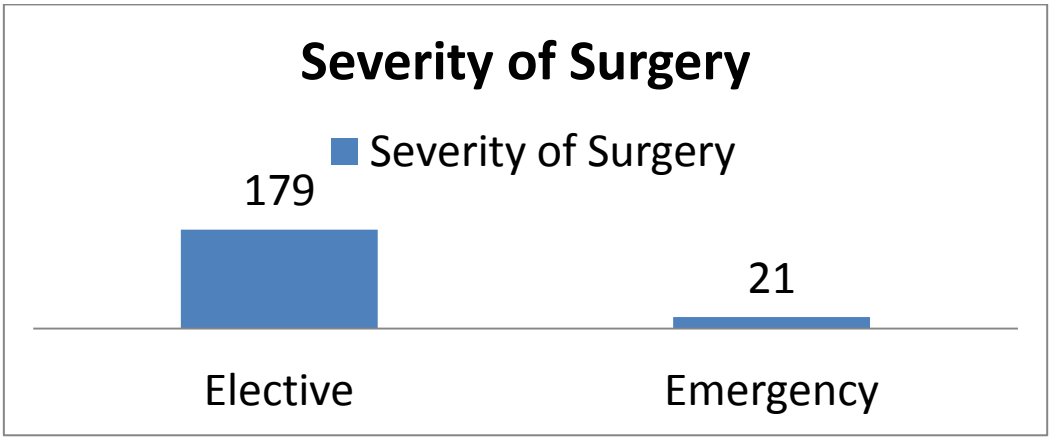

141 cases of direct hernia were noted, the rest were indirect.



12 patients in the study population presented with obstructed hernia, 54 were irreducible while the rest were of reducible type.




21 patients had to be taken up for emergency surgery for a multitude of reasons.




**Discussion and surprises encountered**

**Sliding inguinal hernia**

Sliding inguinal hernia is a protrusion of retroperitoneal organs through an abdominal wall defect. Frequency of sliding hernias is about 3-8% of all elective surgeries of inguinal hernias. Sliding hernias are more anatomically challenging, than an uncomplicated non-sliding inguinal hernias.

The anatomical and physiological concept of Sliding inguinal hernia is usually misunderstood by surgeons of all levels of experience. Not infrequently, any inguinal hernia that is big enough or has any organ (e.g. colon, small intestine even part of bladder, ovaries and Fallopian tubes in female young children 3) inside its sac is referred to as sliding hernia.

Strangulated caecum and part of ascending colon

peritoneum, muscle and all layers of abdomen

**Amyand's hernia**

The incidence of appendicitis within an inguinal hernia is extremely rare, estimated at 0.07% to 0.13%. Acute appendicitis is the commonest cause of pain in right iliac fossa. The eponym "Amyand hernia" was first suggested by Creese in 1953, then by Hiatt and Hiatt in 1988, followed by Hutchinson in 1993, in recognition of Claudius Amyand.

**Classification of Amyand Hernias, after Losanoff and Basson[6]**

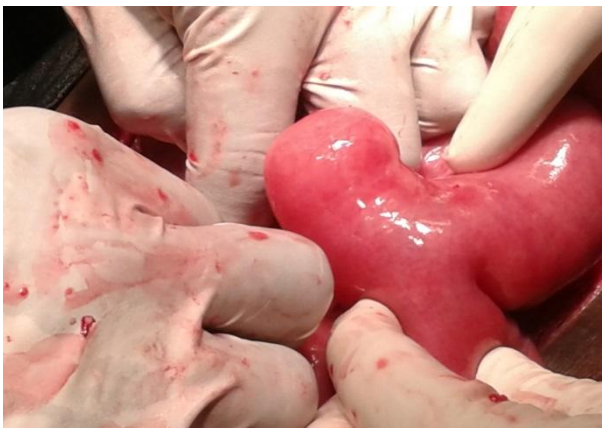
| Classification | Description | Surgical management |
|---|---|---|
| Type 1 | Normal appendix within an inguinal hernia | Hernia reduction, mesh repair, appendicectomy in young patients |
| Type 2 | Acute appendicitis within an inguinal hernia, no abdominal sepsis | Appendicectomy through hernia, primary repair of hernia, no mesh |
| Type 3 | Acute appendicitis within an inguinal hernia, abdominal wall, or peritoneal sepsis | Laparotomy, appendicectomy, primary repair of hernia, no mesh |
| Type 4 | Acute appendicitis within an inguinal hernia, related or unrelated abdominal pathology | Manage as types 1 to 3 hernia, investigate or treat second pathology as appropriate |

Amyand's hernia

**Meckel's diverticulum as content of inguinal Hernia**

Meckel's diverticulum is a true diverticulum in that it contains all tissue layers of the bowel. Although variable, it is most commonly located proximal to the iliocecal junction at a distance between 60 and 100 cm.[7,8] Rarely, a large Meckel's diverticulum can be involved in abdominal, femoral and inguinal hernias (Littre's hernia) with approximately half of all Littre's hernias involving the inguinal canal.[9,10]

Clinically, a distinction between the involvement of a small bowel loop versus a Meckel's diverticulum in an inguinal hernia cannot be made and thus the diagnosis of a Littre's hernia is often in the perioperative period. However, the signs and symptoms of an incarcerated Meckel's diverticulum on presentation are thought to progress slower than a hernia involving small bowel.[5]



Meckel's Diverticulum

**Obstructed Femoral Hernia with Ovary as the content**

Incarcerated femoral hernia containing the presence of ovary in the sac of a femoral hernia is a rare condition, with only 10 cases having been described so far.

Herniation of the ovary in a femoral hernia however is very rare due to its normal anatomical position as it lies at a lower level than the femoral ring

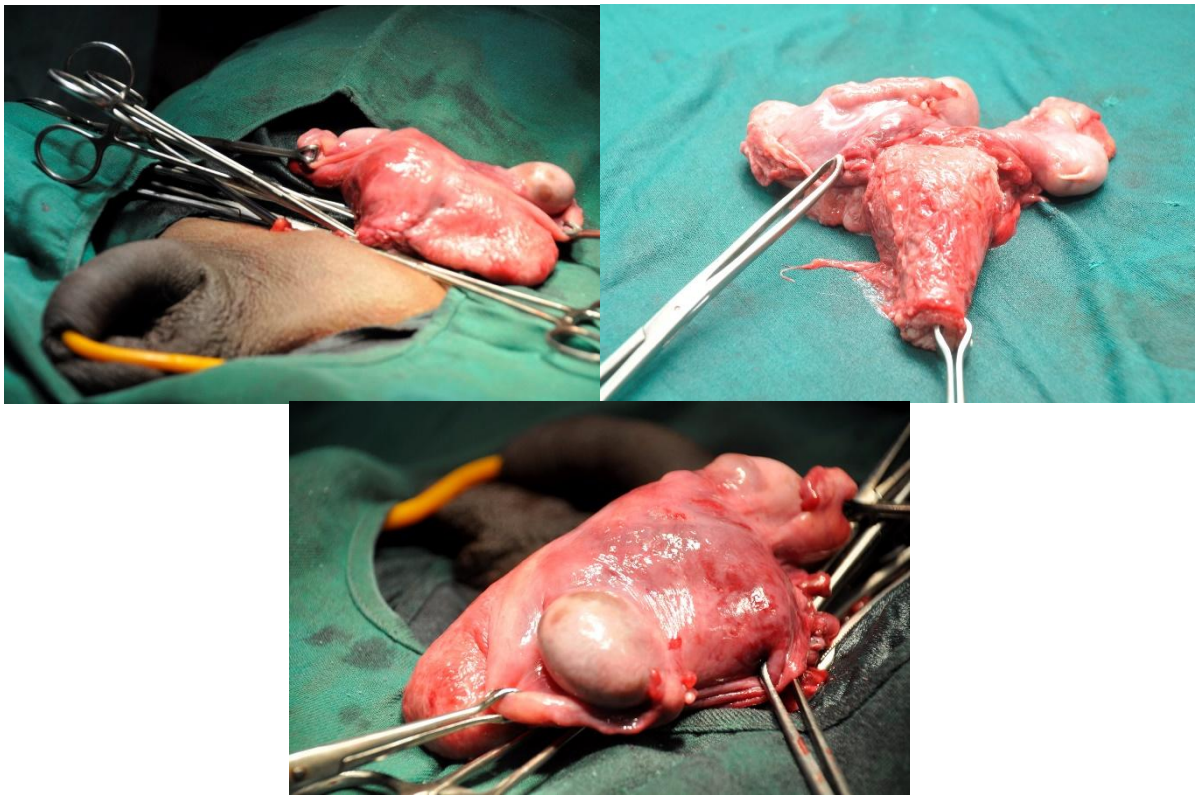
Obstructed Femoral Hernia with Ovary as the content

**Persistent Mullerian Duct Syndrome**

Mullerian duct syndrome (PMDS) is usually an accidental finding either during orchidopexy or during routine inguinal hernia repair in male patients presenting with maldescended or cryptorchid testes.

It is caused by a defect in the mullerian inhibiting substance system. Intraoperatively, mullerian remnants consisting of an infantile uterus and fallopian tubes are usually found. Familiarity with PMDS is necessary to diagnose the condition.

It is due to Mutation of AMH gene 19 and is mostly autosomal recessive patients are virilised males they develop both wolffian and mullerian structures it is often a late discovery during surgery or during investigation for undescended testis.



Persistent Mullerian Duct Syndrome

**Conclusion**

Inguinal hernia is one of the most common surgical conditions encountered in general surgical practice. However, it is not uncommon to find varied presentations and unusual findings at intra operative exploration. A surgeon has to keep in mind the various possibilities that may be encountered during surgical exploration of inguinal hernias and an appropriate management plan should be devised at the time of exploration to provide and achieve optimum results.

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