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Treatment modalities for scrotal swellings and its outcome at a tertiary care hospital

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Abstract

The scrotal pouch is situated below the penis and pubic symphysis containing the testes, epididymis and lower portions of the spermatic cord. It is divided into two sacs by a partial median raphe or septum which continues into the perineal skin posteriorly and anteriorly along the lower aspect of the penis. The homologue of this raphe in females remains separated to form the labia majora. The cases admitted to the surgical wards in Medical College Hospital and Research Center, formed the material for this study. During this period 100 cases with h/o scrotal swelling admitted in various surgical units, selected at random were studied in detail as per proforma. Jaboulay procedure was the most common surgery done for hydrocele followed by Lords plication and partial excision. Open varicocelectomy was done in 11 cases and laparoscopic in 2 cases. Orchidectomy was done in 7 cases, four for testicular tumor and 3 cases were for torsion testis. Orchidopexy was done in 3 cases of torsion where the affected testis was found viable. Debridement and Incision Drainage were done for Fourniers and Scrotal abscess respectively.

Keywords: Treatment modalities, scrotal swellings, outcome

Introduction

Each testis develops from the coelomic epithelium that covers the medial side of the mesonephros^[1]. This is indicated by the appearance of an area of thickened germinal epithelium on the medial side of mesonephric ridge in the 5th week. This thickening is known as genital or gonadal ridge. Upto the 7th week the gonad has no differentiating feature. Then the rapidly proliferating germinal epithelium forms a number of solid gonadal or sex cords, separated by mesenchyme. These cords remain at the periphery of the primordium to form a cortex and in the centre, proliferation of the mesenchyme of mesonephros constitutes medulla^[1].

The cells derived from the surface of gonad form the supporting cells of sertoli. These tubules remain solid until 5th to 6th month.

With the incorporation of primordial germ cells into the cords and canalization, seminiferous tubules are formed. The cords that are not canalized the interstitial cells of testis, some of which are also derived from the interstitial cells of testis, which are also derived from the surrounding mesenchyme^[2].

The mesenchymal cells surrounding the developing the testis, form a dense fibrous layer called the tunica albuginia. The Leydig cells are seen by the 3rd month. Between 8th and 11th week the testes shorten and broaden^[3].

The scrotal pouch is situated below the penis and pubic symphysis containing the testes, epididymis and lower portions of the spermatic cord. It is divided into two sacs by a partial median raphe or septum which continues into the perineal skin posteriorly and anteriorly along the lower aspect of the penis. The homologue of this raphe in Females remains separated to form the labia majora^[4].

The scrotal sac consists of (i) skin, (ii) Dartos muscle, which replaces superficial fat and Colle's fascia, (iii) external spermatic fascia, (iv) fibres of cremasteric muscle, (v) internal spermatic fascia and (vi) tunica vaginalis (inner lining of parietal peritoneum)^[6, 7].

The scrotal skin is thin, semitransparent, distensible and darker than surrounding skin. The skin is rich in sebaceous glands.

Just beneath the skin is the dartos muscle, a smooth muscle (involuntary) embedded in loose areolar tissue consisting of elastic fibres and connective tissue^[5].

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The dartos muscle responds to changes in the temperature or following sexual excitation by contracting or relaxing accordingly. In cold environments it contracts and gives the wrinkled appearance to the scrotal skin. In, warm environment it relaxes. This action helps in maintaining a steady range of temperature for testicular spermatogenesis, which occurs at a temperature few degrees below the normal body temperature. Dartos is supplied by sympathetic fibres carried from the perineal branch of S₄^[3,6].

External spermatic fascia is a continuation of the external oblique aponeurosis. A few fibres from the internal oblique muscle form the cremasteric muscle. The loop like fibres of cremasteric fascia form a partial investment for the testis and spermatic cord. The fibres are fused to the parietal layer of tunica vaginalis along with the internal spermatic fascia, a continuation of the transversalis fascia. Contraction of this musculo-fibrous layer draws the testis into the sub-inguinal pouch and protects it from injury.

Tunica vaginalis testis is a serous cavity derived from the vaginal process of peritoneum but cut-off from it by obliteration of the processus vaginalis. It provides a covering for most of the testis and epididymis. It has a visceral and parietal layer with a potential space in between. The visceral layer is firmly adherent tunica albuginea of testis and dips between the upper part of testis and epididymis forming a pouch called the sinus of epididymis. The visceral layer extends upwards for a short distance along with the spermatic cord. The parietal layer is separated from the scrotum by a fine layer of extra vaginal cellular^[6].

The anterior scrotum derives its blood supply from the external pudendal artery, which is a branch of the femoral artery. Posteriorly scrotum is supplied by branches of internal pudendal artery with additional supply from testicular and cremasteric arteries traversing the cord. The venous drainage is into the femoral vein.

Methodology

The cases admitted to the surgical wards in Medical College Hospital and Research Center, formed the material for this study. During this period 100 cases with h/o scrotal swelling admitted in various surgical units, selected at random were studied in detail as per proforma.

The method of study followed consists of;

- Detailed history taking and physical examination.
- Local examination of scrotum and its contents with relevant lymphatic and systemic examination.
- Routine laboratory investigations including examination of hydrocele fluid in some cases.
- Relevant special investigations.
- Surgical treatment according to the merits of the case as decided by the attending surgeon, under suitable anaesthesia.
- Operative findings, post operative course and treatment.
- Post operative complications, histopathological correlation (if any), Duration of hospital stay and follow up.

The follow up in these cases was generally poor. The relevant data from the 100 cases was tabulated in a master chart, under different headings.

Results

Table 1: Treatment Modality

Nature of treatment	Number of cases	Percentage
Surgical treatment		
Definite operation	90	90%
Biopsy	01	01%
Medical treatment	09	09%
(conservative)		
Total	100	100

Out of the 100 cases in this study, definitive operation was done for 90 cases. For one case testicular biopsy was done for diagnosis of infertility. 09 cases were put on medical line of management line of management, 2 cases among these were diagnosed to be secondary to tuberculosis and were put on ATT.

Table 2: Type of anaesthesia

Anaesthesia	Number of cases	Percentage (%)
Spinal	84	92.3%
General	01	1.09%
Local	06	6.59%
Total	91	100

84 cases were operated under spinal anaesthesia, 1 cases were operated under general anaesthesia and 6 cases (including biopsy) under local anaesthesia.

Table 3: Emergency vs elective surgery

Number of cases operated	Elective	Emergency
91	71(78.2%)	20(21.8%)

A total of 20 cases were done on emergency basis. These were 5 cases of torsion testis, 9 cases of Fournier's gangrene, 5 cases of scrotal abscess and one case of scrotal abscess with torsion.

Table 4: Nature of definitive operative treatment

Operation done	Number of cases	Percentage (%)
Jaboulay's procedure	30	32.9%
Lord's plication	09	10.2%
Partial excision and eversion of sac	06	6.88%
Varicocelectomy		
- Open	11	12.5%
- Laparoscopic	02	2.2%
Orchidectomy	07	8.45%
Derotation and Orchidopexy	03	3.4%
Incision and Drainage	05	5.68%
Debridement	09	11.2%
Excision of cyst	06	6.7%
Excision of sac with hernioplasty	02	2.2%
Biopsy	01	1.4%

Jaboulay procedure was the most common surgery done for hydrocele followed by Lords plication and partial excision. Open varicocelectomy was done in 11 cases and laparoscopic in 2 cases. Orchidectomy was done in 7 cases, four for testicular tumor and 3 cases were for torsion testis. Orchidopexy was done in 3 cases of torsion where the affected testis was found viable. Debridement and Incision Drainage were done for Fourniers and Scrotal abscess respectively.

Table 5: Post-operative complications

Complication	Number of cases	Percentage
Hematoma /edema of scrotum	20	22.00%
Wound infection	16	17.5%
Uncomplicated	55	60.5%

The post operative complication rate in this study (39.5%) was quite high. The criteria were mild edema of scrotum, haematoma of scrotum and wound infection. Edema/ haematoma was seen in 20 cases and were treated conservatively. Wound infection cases responded to regular change of dressings with antibiotics.

Table 6: Distribution of complication according to mode of surgery

	Number	Complication	Percentage (%)
Jaboulay's procedure	30	12	40
Lord's plication	09	02	22.2
Partial excision and eversion of sac	06	02	33.3
Orchidectomy	07	03	42.8
Orchidopexy	03	01	33.3
Others	36	16	44.5

The above table shows the distribution of complications with various surgeries. The highest complication rate was seen with emergency surgeries mainly comprising of torsion testis, Fournier's gangrene etc. In surgeries for hydrocele, the highest complication rate was seen with Jaboulay's procedure (40%) and partial excision of sac (33.3%).

Table 7: Incidence of haematoma, edema and wound infection in various hydrocele surgeries

Name of surgery	No. of cases	No. of Haematoma	No. of Edema	No. of wound Infection
Jaboulay's procedure	30	03	02	07
Lord's plication	09	01	00	01
Orchidectomy	07	01	00	02
Partial exc./eversion of sac	06	00	00	02
Orchidopexy	03	00	01	00
Others	36	04	08	04

The commonest complication following any surgery on the scrotum was edema of the scrotum. In this study which was seen in 11 cases, haematoma in 09 cases, and wound infection in 16 cases.

Discussion

Table 8: Incidence of haematoma in various series of hydrocele operations

Author and year	Procedure		Excision/eversion	
	Lord's plication No. of haematoma cases	No. of haematoma cases	Of sac No. of haematoma cases	No. of haematoma cases
Present study	9	1	39	3
Peter lord (1964) [7]	22	NIL	NIL	NIL
Effron, Sharkey (1967) [8]	29	1	30	9
Dahl et. al. (1972) [6]	25	-	23	6
Reddy, Srinivas (1973) [9]	400	NEG.	-	-
Rai, Goyal, Singh (1979) [10]	50	-	20	15
Campbell (1927) [11]	-	-	502	12

The results of the present study are comparable to that of previous workers. Haematoma was seen in 1 case operated by Lord's plication. In those treated by partial excision/ excision of

sac haematoma was seen in 3 cases. This study shows that compared to conventional methods of treatment of hydrocele, i.e. excision/partial excision of sac, Lord's plication gave rise to less complications and morbidity. The plication procedure avoids the opening of the cleavage between the sac and surrounding tissue, thus reducing the oozing and subsequent haematoma formation.

High incidence of complications by conventional methods have been reported by other workers, i.e. Campbell 12/502 (24%), Effron and Sharkey (1967) 9/30 (30%).

Table 9: Comparison of hydrocele operation results with the recent studies (O.P. Agarwal, 1983)

Nature of Operation	Number of cases		Post-operative complications			
	Agarwal Series	Present Study	Haematoma		Infection	
			Agarwal	Present	Agarwal	Present
Lord's Plication	50	9	NIL	1(11.1%)	NIL	1 (11.1%)
Excision of sac	50	39	14 (28%)	3(7.7%)	8 (16)	9 (23%)

The results of the present study are fairly comparable to that of Agarwal series, ⁵⁵except the high rate of infection seen with Jaboulay's / Excision of sac.

Conclusion

- The patients were treated with surgery or conservative medical line. Definitive surgery was done in 90 cases. Penicillin/cephalosporins/ampicillin/gentamicin were commonly used antibiotics.
- Most of the surgeries were done under spinal anaesthesia (84%).
- Various forms of hydrocele constituted a major portion of the study (50 cases), followed by varicocele.
- Jaboulay's procedure was the commonest operation done (30 cases) followed by lord's plication in 9 cases.
- Amongst the various operations for hydrocele, Lord's plication was associated with the least number of complications. Of the 9 cases treated by this procedure, one case had haematoma and 1 case had wound infection.

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