

COMPARATIVE STUDY OF LAPAROSCOPIC VERSUS OPEN ORCHIDOPEXY FOR UNDESCENDED TESTIS***Dr. Puneet Shrivastava, Dr. Richa Jaiman, Dr. Abhishek Nigam, Dr. Surendra Pathak and Dr. Shivam Sharma**

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ABSTRACT

Background: The undescended testes (cryptorchidism) is one of the most common disorders of childhood, affecting 0.8–1.8% of infants at 1 year of age, 3% of full-term new-borns and 21% of premature babies^{1,2}. Approximately 20% of these cases represent non-palpable testes (NPT) that can be abdominal (normal or dysgenetic and high or low), intracanalicular, ectopic or absent (true monorchia or vanishing testis)¹. Thus, early diagnosis and treatment of undescended testis are needed to preserve fertility and to prevent testicular malignancy. **Objective:** To prove that laparoscopic orchidopexy is more effective for diagnosis and treatment of undescended testis in comparison to open procedure. **Material & Method:** This study included 40 cases of undescended testis that were admitted and treated in the Department of General Surgery, S.N. Medical College, Agra. The study period was from August 2019 to August 2021. **Conclusion:** Results of our study revealed that the laparoscopic orchidopexy better than open orchidopexy in terms of Postoperative pain, Mean time to resume bowel sound, Duration of hospital stay, Scrotal edema, wound infection, Testicular site and Testicular atrophy.

KEYWORDS: Laparoscopic orchidopexy, cryptorchidism, open orchidopexy.**1. INTRODUCTION**

The undescended testes (cryptorchidism) is one of the most common disorders of childhood, affecting 0.8–1.8% of infants at 1 year of age, 3% of full-term new-borns and 21% of premature babies.^[1,2] Approximately 20% of these cases represent non-palpable testes (NPT) that can be abdominal (normal or dysgenetic and high or low), intracanalicular, ectopic or absent (true monorchia or vanishing testis).^[1] It has been established that abdominal testes may be associated with an increased risk of infertility and cancer.^[3,4] The incidence of carcinoma in situ is determined to be 1.7% among patients with undescended testes, especially among those 18–20 years of age.^[4] Thus, early diagnosis and treatment of undescended testis are needed to preserve fertility and to prevent testicular malignancy. In recent years, laparoscopy has been considered as the most reliable method for localizing the NPT, diagnosis of vanishing or absent testes, performing orchidopexy or orchidectomy at the same time, and allowing the surgeon to select an appropriate incision.^[5] However, despite advancements in laparoscopic technique and instrumentation, the natural extension of laparoscopic orchidopexy (LO) has remained controversial in the management of NPT, and some groups still advocate open surgery.^[6,7] Thus, it is necessary to investigate the real advantages of interventional laparoscopy over traditional open orchidopexy (OO) or whether it can be regarded as a substitute for open procedures.

2. MATERIALS AND METHOD

Total numbers of patients studied were 40.

Inclusion Criteria

- Patients who came to Sarojini Naidu Medical College, Agra above the age of six months with history of absent testis in the scrotum either unilateral or bilateral.

Exclusion Criteria

- Patients unfit for general or spinal anaesthesia.
- Patients of undescended testis of age less than 6 months.
- Intersex disorder.
- Patients with retractile testes.
- Palpable testis in inguinal region
- Large hernias not amenable to laparoscopic techniques
- Patients unfit for surgery.
- Patients who were reluctant to oblige for the study.

All the patients were admitted and were subjected to standard operative treatment. Preoperative fitness for anaesthesia and surgery was taken, proper COVID-19 protocol was followed. Operative procedure and findings were recorded. Patients with clinically palpable testis and intracanalicular testis confirmed by ultrasound were subjected to orchidopexy. Patients with impalpable testis

were subjected to diagnostic laparoscopy followed by laparoscopic orchidopexy.

3. RESULTS AND DISCUSSION

A total of 40 patients were enrolled in the study, which were clinically diagnosed as non-palpable undescended testes. Two groups of 20 patients in each group was made randomly.

Group A: Comprised 20 patients in whom laparoscopic orchidopexy was done either by primary laparoscopic or by fowler Stephan staged laparoscopic orchidopexy.

Group B: Comprised 20 patients in whom primary open orchidopexy was done.

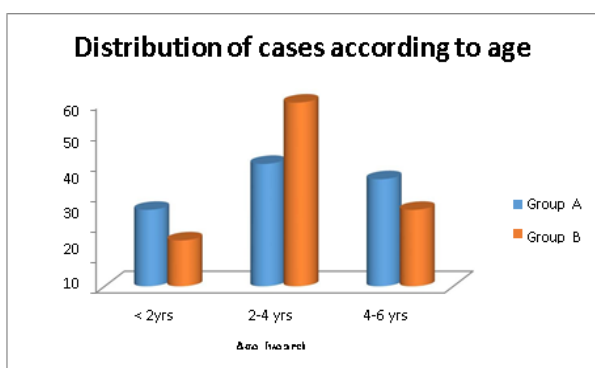
TABLE 1: DISTRIBUTION OF CASES ACCORDING TO AGE

Age group	Group A		Group B		Total	
	No.	%	No.	%	No.	%
< 2yrs	5	25	3	15	8	20
2-4 yrs	8	40	12	60	20	50
4-6 yrs	7	35	5	25	12	30
Total	20	100	20	100	40	100

Groups	No.	Age (yrs)		t-value	p-value
		Mean	SD		
A	20	3.2	2.8	0.3046	0.7624
B	20	3.5	3.4		

The two groups are not significantly different with respect to mean age.

The groups are not significantly different. Fisher's exact test is used.



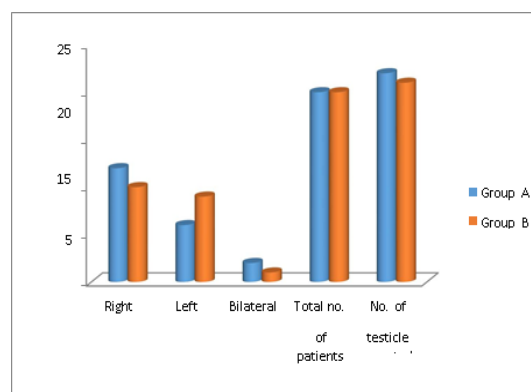
Most of the patients in both groups were in 2-4-year age groups (50%). The minimum age of patient considered for orchidopexy was 6 month below which it is not recommended. The mean age in group A was 3.2 years, and in group B was 3.5 years. The difference between the groups was not significant.

TABLE 2: DISTRIBUTION OF CASES ACCORDING TO LATERALITY

Side of undescended testes	Group A		Group B		Total	
	No.	%	No.	No.	No.	%
Right	12	60.00	10	50.00	22	55.00
Left	6	30.00	9	45.00	15	37.50
Bilateral	2	10.00	1	5.00	3	7.50
Total no. of patients	20	100.00	20	100.00	40	100.00
No. of testicle operated	22		21		43	

p-value=0.5509.

The groups are not significantly different. Fisher's exact test is used.



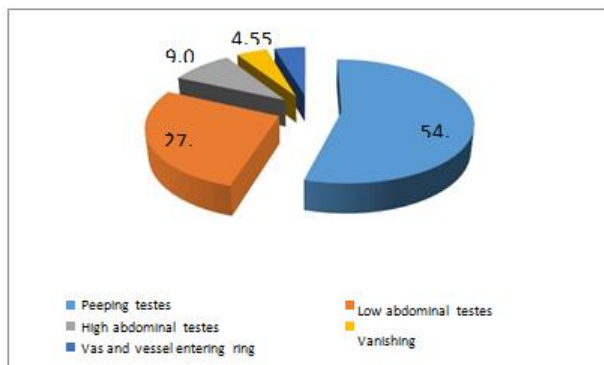
In group A total 12 cases 60% were right sided, while in group B total 10 cases 50% were right sided.

In group A total 6 cases 30% were left sided while in group B total 9 cases 45% were left sided.

Two cases were bilateral in group A and one case was bilateral in group B. So total no of testicle operated were 43.

TABLE 3: INTRA OPERATIVE FINDINGS /LOCATION OF TESTES IN GROUP A

Location of testes	No.	%
Peeping testes	12	54.55
Low abdominal testes	6	27.27
High abdominal testes	2	9.09
Vanishing testes	1	4.55
Vas. And vessel entering the ring	1	4.55
Total	22	100.00

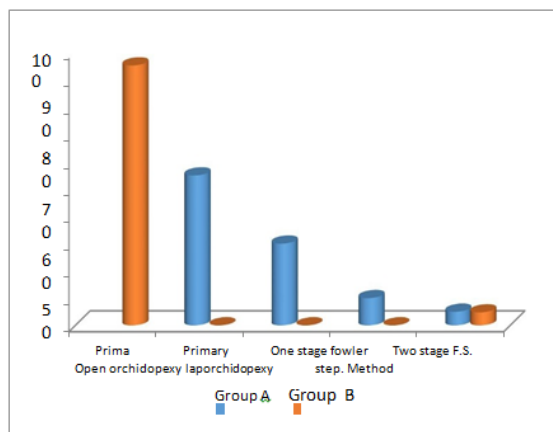


In laparoscopic group 54% cases were adjacent to internal inguinal ring 27% cases were low abdominal testes, and 9% were high abdominal. In one case vanishing testes was found and in one case only vas and vessel from the study.

So a total of 20 testicles were operated in group A by laparoscopic method and 21 testicle were operated in group B by open method.

TABLE-4: DISTRIBUTION OF CASE ACCORDING TO TYPE OF PROCEDURE DONE

Type of procedure	Group A		Group B	
	No.	%	No.	%
Primary open orchidopexy			20	95.24
Primary lap orchidopexy	11	55.00		
One stage fowler step. method	6	30.00		
Two stage F.S. methods	2	10.00		
Orchidectomy	1	5.00	1	4.76
Total	20	100.00	21	100.00



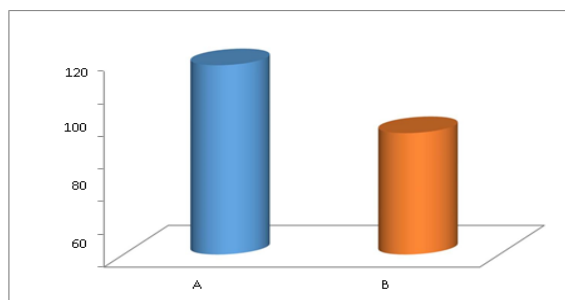
In group A out of total 20 testes operated, 11 cases 55% was done by primary laparoscopic orchidopexy, 6 cases 30% was done by one stage fowler Stephen laparoscopic orchidopexy, two cases 10% was done by two stage fowler Stephan method. One testes was atrophied so orchidectomy was done.

In group B out of 21 testes 20 were operated by primary open method. One testes was found atrophied so orchidectomy was done.

So in group A total 19 orchidopexy was done and in group B total 20 orchidopexy was done.

TABLE-5: COMPARISON OF OPERATION TIME IN GROUP A AND B

Groups	Operation Time (min.)			t-value	p-value
	Range	Mean	SD		
A	90-120	116.2	12.42	-9.629	<0.0001
B	60-90	74.6	14.8		



The two groups are significantly different with respect to Operation Time.

In group A average operative time was 90-120 minutes while in group B it was 60-90 minutes.

TABLE-6: COMPARISON OF HOSPITAL STAY IN GROUP A AND B

Groups	Hospital stay (hrs.)		t-value	p-value
	Mean	SD		
A	24.75	2.60	-48.4212	<0.0001
B	72.25	3.50		

In group A mean duration of hospital stay was 24.75 hrs while in group it was 72.25 hrs.

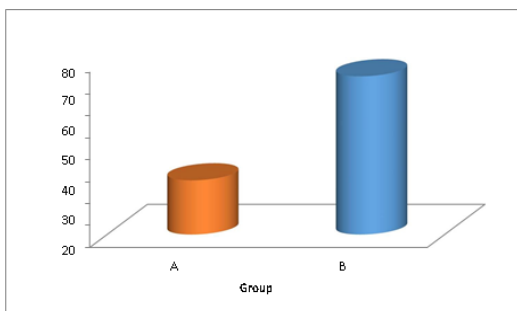
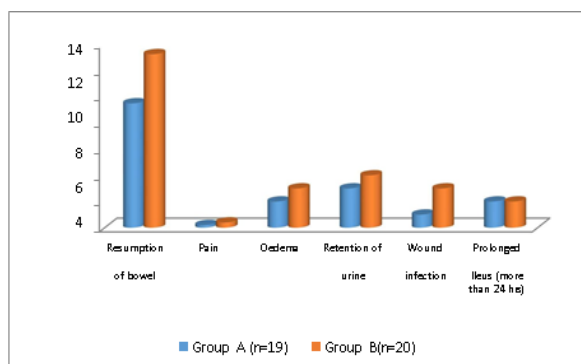


TABLE-7: COMPARISON OF POST-OPERATIVE COMPLICATIONS IN GROUP A AND B

	Group A (n=19)	Group B (n=20)	t-value	p-value
	Mean±SD	Mean±SD		
Resumption of bowel sound (hrs)	9.50±1.50	13.25±2.25	6.090	<0.0001
Pain	0.20±0.05	0.40±0.10	7.834	<0.0001
Oedema	2 (10.53)	3 (15.00)		
Retention of urine	3 (15.79)	4 (20.00)		
Wound infection	1 (5.26)	3 (15.00)		
Prolonged ileus (more than 24 hrs)	2 (10.53)	3 (15.00)		

(Figures in parentheses indicate percentage)



Mean time to resume bowel sound in group A was 9.50hrs while in group B it was 13.25 hrs.

Mean of VAPS pain score assessed in group A patients was 0.20 while in group B it was 0.40 on Wong Baker scale.

In group A 2 patients (10%) developed scrotal oedema while in group B only 1 patient (5%) developed oedema.

In group A no patients developed urinary retention while in group B 3 patients (15%) developed urinary retention in the immediate postoperative period.

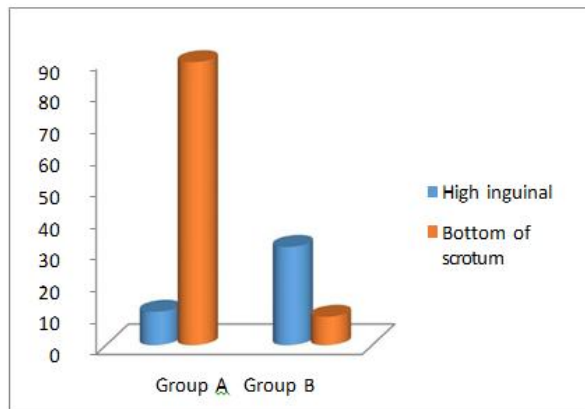
In group A the rate of wound infection was 5% while in group B it was 15%.

In group A 10% of patients developed prolonged ileus while in group B 15% of patients developed prolonged ileus.

TABLE 8: FOLLOW UP COMPARISON IN BOTH GROUPS

Testicular site	Group A	Group B
High inguinal	2(10.53)	4(21.05)
Bottom of scrotum	17(89.47)	15(78.95)
Total	19(100.00)	19(100.00)

(Figures in parentheses indicate percentage)



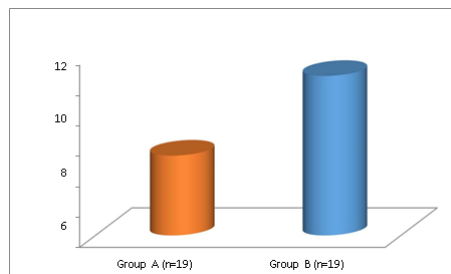
After 3 months of follow-up in group A the position of testes was assessed clinically. Out of 19 orchidopexies, 2 testes (10.5%) were in high inguinal position and 17 testes (89.5%) were at the bottom of the scrotum.

In group B one patient dropped out of the study. So out of 20 testes operated, only 19 were left. Out of 19 orchidopexies, 4 testes (21%) were in high inguinal position and 15 testes (78.9%) were at the bottom of the scrotum.

TABLE 9: FOLLOW UP COMPARISON IN BOTH GROUPS

	Group A (n=19)	Group B (n=19)
Testicular atrophy	1(5.26)	2(10.52)

(Figures in parentheses indicate percentage)



After 3 months of follow-up period, testes were also assessed for atrophy by means of clinical examination and ultrasonography.

In group A, out of 19 testes, 1 testis (5.26%) was found atrophied.

While in group B 2 testes 10.52% were found atrophied.

4. CONCLUSION

Results of our study revealed that the laparoscopic orchidopexy better than open orchidopexy in terms of –

- Postoperative pain (less in laparoscopic group)
- Mean time to resume bowel sound (less in laparoscopic group)
- Duration of hospital stay (shorter in laparoscopic group)
- Scrotal edema (less in laparoscopic group)
- Wound infection (low in laparoscopic group)
- Testicular site (better in laparoscopic group)
- Testicular atrophy (less in laparoscopic group)

Therefore, it seems that laparoscopic orchidopexy should be preferred over open orchidopexy to provide a better results.

REFERENCES

1. Smolko MJ, Kaplan GW, Brock WA (1983) Location and fate of the nonpalpable testis in children. *J Urol*, 129: 1204–1206.
2. El-Anany F, Gad El-Moula M, Abdel Moneim A et al (2007) Laparoscopy for impalpable testis: classification-based management. *Surg Endosc*, 21: 449–454.
3. Ferro F, Lais A, Gonzalez-Serva L (1996) Benefits and afterthoughts of laparoscopy for the nonpalpable testis. *J Urol*, 156: 795–798.
4. Giwercman A, Bruun E, Frimodt-Møller C et al (1989) Prevalence of carcinoma in situ and other histopathological abnormalities in testes of men with a history of cryptorchidism. *J Urol*, 142: 998–1001.
5. Moore RG, Peters CA, Bauer SB et al (1994) Laparoscopic evaluation of the nonpalpable testis: a prospective assessment of accuracy. *J Urol*, 151: 728–731.
6. Merguerian PA, Mevorach RA, Shortliffe LD et al (1998) Laparoscopy for the evaluation and management of the nonpalpable testicle. *Urology*, 51: 3–6.
7. Baniaghbal B, Davies M (2003) Laparoscopic evaluation of testicular mobility as a guide to management of intra-abdominal testes. *World J Urol*, 20: 343–345.