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VARICOCELE;

COMPARISON OF COMPLICATIONS IN OPEN SURGERY VERSUS LAPAROSCOPIC SURGICAL MANAGEMENT OF VARICOCELE AMONG ADOLESCENTS AT A TERTIARY CARE HOSPITAL.

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ABSTRACT… Objectives: To compare frequency of complications in open surgery versus laparoscopic surgical management of varicocele among adolescents at a tertiary care hospital. **Study Design:** Randomized controlled trial (RCT) study. **Setting:** Unit-I Department of General Surgery, Nishtar Medical College and Hospital, Multan. **Period:** January 2014 to February 2015. **Material and methods:** Group A was managed by open surgery while group B patients had undergone laparoscopic management. All data were analyzed by SPSS – 20. **Results:** A total of 100 patients with varicocele were taken. Mean age of our study cases was 26.59 ± 5.54 years. Mean duration of surgery was 33.16 ± 5.97 minutes. Mean hospital stay in our study was 45.60 ± 12.53 minutes. Mean duration of disease was 5.31 ± 1.41 months. Of these 100 study cases, 19 (19%) were obese. Post-operative complications were noted in 32 (32%) of our study cases. Recurrence was noted in 19(19%) of our study cases, hydrocele formation in 10 (10%) and wound infection was noted in only 03 (3%) of our study cases. **Conclusion:** Our study results conclude that laparoscopic management of varicocele is safe, efficient, cost effective and reliable procedure. Complications are significantly less than that of open surgery. Laparoscopic management is associated with significantly less duration of surgery and shorter hospital stays than that of open surgery. By using laparoscopic technique we can decrease morbidities among targeted population which will provide relief to the suffering families as well as be helpful for hospital authorities in terms of short hospital stays leading to less investments.

Key words: Varicocele, Open Surgery, Laparoscopic Management.

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INTRODUCTION

A varicocele is a collection of dilated veins in the pampiniform plexus that drains the testicles and is located in the upper scrotum just above the affected testis. Idiopathic varicocele is the most commonly diagnosed prepubertalandrological condition. The earliest description of varicocele in the modern literature was in 1885 when a conventional description of surgical treatment was given by Barwell. However, it has only been in the last two decades that adolescent varicocele have been shown to affect testicular growth and its function[1,2] and it is most prevalent correctable cause associated with male factor infertility.

Varicocele is the most common correctable etiology found in adult men with infertility. The main goal of all surgical methods of treating varicocele is to improve the potential for future fertility.[3-5] Varicocele is a very common finding in young men and boys. It can affect up to 15% of men in the general population. In men, it usually constitutes up to 35% of primary infertility and up to 80% of secondary infertility.[3,6]

Several approaches for the management of varicocele are being used which may include, retroperitoneal, microsurgical inguinal or subinguinal approaches, laparoscopic repairs or radiographic embolization.[7-10] An ideal surgical treatment for varicocele would be one where the testicular function is preserved, while the varicocele is completely eliminated with a low rate of recurrence, hydrocele formation, adjacent nerve damage or any other potential complications.[11-19]

Various studies have reported various success rates corresponding to each technique along with duration of surgeries, postoperative hospital stay, sperm parameters and complications. Chan P from Indiareported15 % complication frequency associated with laparoscopic management and 45 % complication frequency in patients undergoing open surgery.[9]

No such study was conducted in Pakistan which reported complication rates in these patients, moreover no such data available from our local population of Southern Punjab. The results will also surgeons to opt better technique related with less morbidities which will lead to better quality of life, cost effective (both for hospital authorities and patients).

MATERIAL AND METHODS

A proforma was developed to record the findings. Patients of varicoceles aged 18 to 40 years meeting inclusion criteria were enrolled in this study after taking informed consent. The duration of the study was one year starting from January 2014 to February 2015. Varicocele secondary to malignancy, obstruction and patients with history of previous lower abdominal surgery and recurrent cases were not included in the study. Once registered, these study cases were randomly divided into 2 groups (Group A and group B) by draws methods. Group A was managed by open surgery while group B patients had undergone laparoscopic management. Both these procedures were performed by a consultant surgeon having 5 years post fellowship experience. Open surgery was done through grid iron approach and testicular vessels was approached extra-peritoneally. Wound was closed in layers with absorbable sutures and skin was closed with silk sutures. Laparoscopic management was done by inserting 3 ports, testicular vessels was approached intra-peritoneally and testicular veins was clipped and divided. Wound was closed with absorbable suture material and skin with silk sutures. These patients were followed for 1 month to record any postoperative complication. Complications were measured in terms of recurrence, hydrocele formation and wound infection. These were measured within 30 days of surgery. Presence of any of these (Recurrence/ Hydrocele formation/Wound infection) has been labeled as complication.

Recurrence

Development of varicocele (3 or more tortuous veins after successful management of the study cases) as diagnosed on color Doppler ultrasound.

Hydrocele formation

An abnormal collection of any amount of serous fluid in the sac of the tunica vaginalis as diagnosed on ultrasound.

Wound infections

Any amount of purulent discharge of pus and blood from wound, swelling of the surface, redness around the margins of the wounds (assessed clinically), fever (100F or above assessed with thermometer) presence of any one of these was characterized as infected wound.

All the data was entered and analyzed using SPSS-18. Mean and standard deviation for the age, duration of disease, duration of surgery and hospital stay was calculated. Frequencies and percentage were calculated for the categorical variables like complications (Present/Absent), type of complications and Obesity (Obese/Non-obese). Chi-square test has been applied to compare complications in both groups and to ascertain impact of potential confounders.

RESULTS

A total of 100 patients with varicocele meeting inclusion and exclusion criteria of my study were registered. These study cases were divided into 2 groups i.e. group A and group B (50 patients in each group). Patients in group A were managed through open surgery while that of group B were managed through Laparoscopic surgical method. Varicocele was present on left side in 82 (82%) cases, while grade 1 varicocele was present in 19 (19%), grade 2 in 51 (51%) and grade 3 in 30 (30%) of our study cases. Mean age of our study cases was 26.59 ± 5.54 years (range; 19 – 36 years) with 71 (71%) patients were aged less than 30 years. Mean duration of surgery was 33.16 ± 5.97 minutes (with minimum duration of

surgery was 25 minutes while maximum duration of surgery was 45 minutes). Our study results have indicated that majority of our study cases 51 (51%) had duration of surgery for more than 30 minutes. Mean hospital stay in our study was 45.60 ±12.53 minutes (with minimum duration of hospital stay was 24 hours while maximum hospital stay was 72 hours). Majority of our study cases i.e. 58 (58%) stayed in hospital for more than 36 hours. Mean duration of disease was 5.31 ± 1.41 months (with minimum disease duration was 4 months while maximum duration of disease was 9 months). Our study results have indicated that majority of our study cases i.e. 65 (65%) had disease duration less than 6 months. Of these 100 study cases, 19 (19%) were obese. Post-operative complications were noted in 32 (32%) of our study cases. Recurrence was noted in 19(19%) of our study cases, hydrocele formation in 10 (10%) and wound infection was noted in only 03 (3%) of our study cases. Complication were stratified with regards to surgical treatment (open surgery and laparoscopic management) and it was observed that these complications were significantly more common in open surgery i.e. p= 0.018.

Surgical Treatment	Complications		P – value
	Yes (n=32)	No (n=68)	
Open Surgery (n=50)	22	28	0.018
Laparoscopy (n=50)	10	40	
Total	100		

Table-I. Stratification of complications with regards to surgical treatment. (n=100)

Age groups	Complications	Groups		P – value
		Group A	Group B	
18 – 30 Years (n=71)	Yes (n=25)	19	06	0.001
	No (n=46)	16	30	
31 – 40 Years (n=29)	Yes (n=07)	03	04	0.682
	No (n=22)	12	10	
Total	100			

Table-II. Stratification of age with regards to complications in both groups. (n=100)

Duration of surgery	Complications	Groups		P – value
		Group A	Group B	
Equal or less than 30 minutes (n=49)	Yes (n=20)	10	10	0.010
	No (n=29)	04	25	
More than 30 minutes (n=51)	Yes (n=12)	12	00	0.011
	No (n=39)	24	15	
Total	100			

Table-III. Stratification of duration of surgery with regards to complications in both groups. (n=100)

Disease duration	Complications	Groups		P – value
		Group A	Group B	
Less than 6 months (n=65)	Yes (n=19)	13	06	0.102
	No (n=46)	20	26	
Equal or more than 6 months (n=35)	Yes (n=13)	09	04	0.086
	No (n=22)	08	14	
Total	100			

Table-IV. Stratification of disease duration with regards to complications in both groups. (n=100)

Surgical Treatment	Duration of surgery (In Minutes)		P – value
	Mean	Standard deviation	
Open Surgery (n=50)	36.12	5.54	0.000
Laparoscopy (n=50)	30.20	4.84	

Table-V. Stratification of mean duration of surgery with regards to surgical management. (n=100)

Surgical Treatment	Hospital stay (In hours)		P – value
	Mean	Standard deviation	
Open Surgery (n=50)	54.48	10.05	0.000
Laparoscopy (n=50)	36.72	7.43	

Table-VI. Stratification of mean hospital stay with regards to surgical management. (n=100)

DISCUSSION

Varicoceles, which are abnormally enlarged veins of pampiniform plexus, have traditionally been related with male infertility due to the observations that varicoceles are seen more commonly among infertile men and have been associated with abnormalities in semen analyses. In fact, varicoceles are the most prevalent cause of male factor infertility which can be corrected. This study was conducted to compare laparoscopic management of varicocele versus open surgery in our population. Our study cases were divided into 2 groups i.e. group A and group B (50 patients in each group). Patients in group A were managed through open surgery while that of group B were managed through Laparoscopic surgical method. Mean age of our study cases was 26.59 ± 5.54 years, ranging from 19-36 years with 71 % were aged less than 30 years. An Iranian study conducted by Shamsa et al[19] reported mean age of patients with varicocele to be 27.4 ± 6.6 years, these findings are close to our study results. A study conducted by Hassan et al[20] from Rawalpindi reported mean age 23.2 ± 4.84 years of the patients with varicoceles, these findings are close to that of our study results.

Varicocele was present on left side in 82 (82%) cases, while grade 1 varicocele was present in 19 (19%), grade 2 in 51 (51%) and grade 3 in 30 (30%) of our study cases. Hasan et al[20] from Rawalpindi reported 86.3 % varicoceles were on the left side, these findings are close to that of our study results. Hasan et al[20] reported grade 1 varicoceles in 28.75 %, grade 2 in 45 % and grade 3 varicoceles in 26.25 % of our study cases. Again these findings are similar to that of our study results.

Mean duration of surgery was 33.16 ± 5.97 minutes (with minimum duration of surgery was 25 minutes while maximum duration of surgery was 45 minutes). Our study results have indicated that majority of our study cases 51 (51%) had duration of surgery for more than 30 minutes. Mean duration of surgery in group A was 36.12 ± 5.54 minutes while that of group B was 30.20 ± 4.84 minutes. Hasan et al[20] reported 30.48 ± 10.6 minutes in case of laparoscopic treatment while 38.75 ± 7.8 minutes in case of open surgery, these findings are similar to that of our study results. A study conducted by Shamsa et al[19] from Iran reported mean operative time in patients undergoing laparoscopic management to be 30.0 ± 5.5 minutes while in patients undergoing open surgery was 38.0 ± 1.8 minutes. Our study results are in compliance with that of being reported by Shamsa et al.[19] A study conducted by Maheshwari et al[82] reported mean operative time in open surgery exceeding over laparoscopic management to be from 30.17 minutes to 30.74 minutes. These findings are in compliance with our results because our study also reports less duration of surgical procedure with laparoscopic management.

Mean hospital stay in our study was 45.60 ± 12.53 minutes (with minimum duration of hospital stay was 24 hours while maximum hospital stay was 72 hours). Majority of our study cases i.e. 58 (58%) stayed in hospital for more than 36 hours. Maheshwari et al[82] reported 1.12 days mean

hospital stay in patients treated with laparoscopic procedure while 1.97 days in patients treated by open surgery. These findings are similar to that of our study results. Similar results have been reported by Hasan et al[20] as mean hospital stay with laparoscopic management was 38.6 ± 9.6 hours while with open surgery it was more than 2 days, these findings are similar to that of our study results.

Mean duration of disease was 5.31 ± 1.41 months (with minimum disease duration was 4 months while maximum duration of disease was 9 months). Our study results have indicated that majority of our study cases i.e. 65 (65%) had disease duration less than 6 months. Of these 100 study cases, 19 (19%) were obese.

Different studies[9,19,20,21] in literature have reported that open surgical management of varicocele is related with more complications than that of laparoscopic management, similar findings are of our study as well. Post-operative complications were noted in 32 (32%) of our study cases i.e. 22 % in group A while 10 with laparoscopic management. Complication were stratified with regards to surgical treatment (open surgery and laparoscopic management) and it was observed that these complications were significantly more common in open surgery i.e. p= 0.018. A study conducted by Shamsa et al[19] reported 24 % frequency of postoperative complications with open surgery which is close to our study results. Similar results have been reported by Maheshwari et al[21]. Similar results have been reported by Shamsa et al[19] from Iran and Hasan et al[81] from Rawalpindi, Pakistan. An Indian study[9] reported complications 45 % in patients undergoing open surgery while 15 % in patients undergoing laparoscopic management, these findings are in compliance with that of our study results.

Recurrence was noted in 19(19%) of our study cases, hydrocele formation in 10 (10%) and wound infection was noted in only 03 (3%) of our study cases. Maheshwari et al[21] reported 8.3 % frequency of post-operative hydrocele formation which is close to our study results. Maheshwari et al[21] reported wound infection 5.3% being present only in patients undergoing open surgery, our study results are also in compliance with that of Maheshwari et al[21] as wound infection was only seen in open surgery patients in our study as well and it was 6 % in patients undergoing open surgery i.e. 3 out of 50 patients. Maheshwari et al[21] reported slightly less frequency of recurrence (5.6%) which was 19 % in our study.

CONCLUSION

Our study results conclude that laparoscopic management of varicocele is safe, efficient, cost effective and reliable procedure which provides desirable outcomes. Complications are significantly less than that of open surgery. Laparoscopic management is associated with significantly less duration of surgery and shorter hospital stays than that of open surgery. Good pain management was also achieved in patients treated with laparoscopic procedure. By using laparoscopic technique we can decrease morbidities among targeted population which will provide relief to the suffering families as well as be helpful for hospital authorities in terms of short hospital stays leading to less investments.

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