

Comparison of Subinguinal Microvaricocelelectomy and Retroperitoneal Varicocelelectomy in reducing the pain of patients with symptomatic Varicocele

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ABSTRACT

Aim: To determine the efficacy of subinguinal microvaricocelelectomy versus retroperitoneal varicocelelectomy in symptomatic varicocele.

Methods: 44 subjects were enrolled for this study, two groups consisting of 22 each by simple random sampling, done by balloting method. Postoperative Pain was observed using Visual Analog scaling and Infection was observed using Southampton scoring system.

Results: Mean age of the study subjects was 31.75±10.18 years, In Subinguinal Micro-varicocelelectomy (SMV) group, average operation time was 66.60±14.80 minutes and in Retroperitoneal Varicocelelectomy (RV), average operation time was 46.80±3.26 minutes (p-value 0.002). Hydrocele occurred only in 2(9.09%) treated with SMV and in Retroperitoneal Varicocelelectomy, only 5(22.72%) hydrocele was observed. Recurrence occurred in 4(18.18%) RV treated group. No recurrence was observed in SMV. Average VAS score for SMV was 2.90±0.88 and for RV it was 3.8±0.42 the difference was statistically significant.

Conclusion: Subinguinal micro varicocelelectomy was better than retroperitoneal varicocelelectomy in many aspects like in SMV, hospital stay, postoperative pain, infection rate, hydrocele formation and recurrence of varicocele is less than RV. Sperm count after six months of treatment was statistically significantly better in both groups but sperm motility was statistically better in SMV and sperm morphology significantly improved in RV group.

Keywords: Varicocele, Pain, Subinguinal Microvaricocelelectomy (SMV), Retroperitoneal Varicocelelectomy (RV)

INTRODUCTION

Varicocele, dilatation of veins of the pampiniform plexus due to incompetent valve of the internal spermatic vein, is found in approximately 15% of the general population 35% of men with primary infertility and in 75-81% of men with secondary infertility. (Nagler et al.1997) Varicocele diagnosis is made on physical examination and in many cases confirmed on ultrasound and Doppler examination. (Barbara et al 1991). In 1949, Palomo reported that surgical intervention could be done by the retroperitoneal approach. (Palomo 1949). However, Dubin and Amelar in 1997 modified the conventional varicocelelectomy. Marmar et al. introduced the first microsurgical technique to treat varicocele. Varicocele has been established to be the commonest correctable cause of male infertility

²Seni(Turek 2008).

Microsurgical subinguinal approach is favored because it is associated with a higher success rate and a lower complication rate as compared with non-microsurgical techniques. The subinguinal approach is also associated with less operative and postoperative pain than inguinal approaches. In patients with grade 3 varicocele, microsurgery and naked eye surgical methods proved similar results in terms of success and complications (Kalkan et al 2011). Microsurgical Technique most closely approaching this "ideal" is the mini-incision, inguinal, or Subinguinal microsurgical varicocelelectomy with delivery of the testicle.

Technically it is a demanding approach, the real advantages of the microsurgical approach to varicocele repairs are reliable identification and preservation of the testicular artery or arteries, cremasteric artery or arteries, and lymphatic channels and reliable identification of all internal spermatic veins and gubernacular veins. The introduction of microsurgical technique to varicocelelectomy has resulted in a substantial reduction in the incidence of postoperative hydrocele formation and testicular atrophy or azoospermia. This is because the lymphatics can be more easily

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identified and preserved. Furthermore, the use of magnification enhances the ability to identify and preserve the 0.5 - 1.5-mm testicular arteries, thus avoiding the complications of testicular atrophy or azoospermia.

The goals of varicocele repair are to relieve pain in symptomatic cases and to improve semen parameters, testicular function, and pregnancy rates in couples with male factor infertility associated with varicocele. Studies have shown that varicocele repair can improve all three of these parameters. Several studies have shown that varicocele surgery can improve sperm counts or motility (Rabbani et al 2010). A study shows that subinguinal microsurgical varicocelectomy seems to be very effective in increasing sperm count and offer a good natural pregnancy rate. (Sinescu1 et al 2010). Significant postoperative complications occurred in patients treated with laparoscopic ligation, but none of the Subinguinal microscopic group (Masami watanabe et al 2005). Varicocele repair results in a significant improvement in semen analysis in 60 to 80 percent of men. Current evidence indicates that microsurgical varicocelectomy is the most effective and least morbid method among the three varicocelectomy techniques for treating varicocele (Ding et al 2012). Comparison of Subinguinal microvaricocelectomy and retroperitoneal varicocelectomy has not been studied extensively and no study is reported in the province of Punjab .This study was conducted in Services hospital Lahore to compare the postoperative results of both Subinguinal microvaricocelectomy and retroperitoneal varicocelectomy in varicocele so that a better procedure may be adopted for varicocele to decrease its complications and improve its outcome.

SUBJECTS AND METHODS

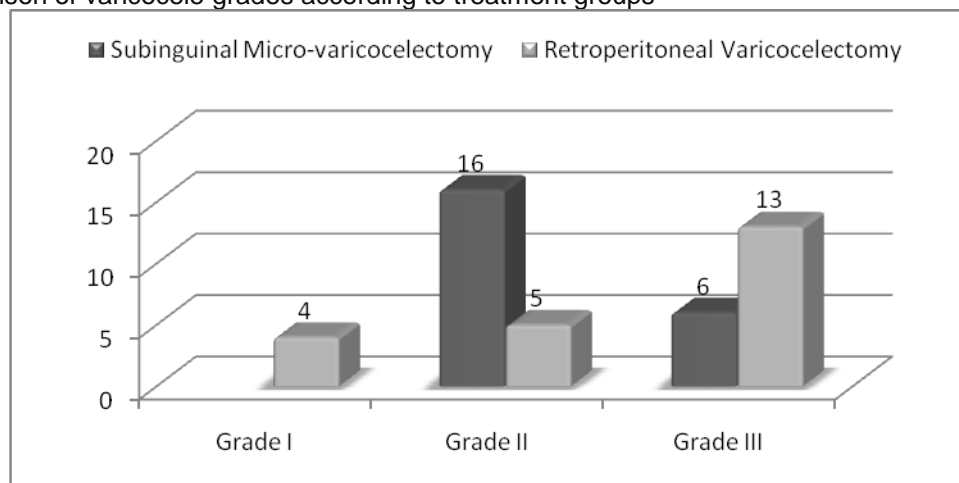
It was a prospective, comparative quasi experimental trail. This study was carried out in Urology Department, SIMS/ Services Hospital, Lahore. The study was conducted during August 2012 to August 2013. The Data was entered and analyzed using SPSS 18

RESULTS

In this study, 3(13.60%) Subinguinal Micro-varicocelectomy treated patients had history of pain in testicular region, 16(72.70%) were with heaviness in scrotal area and 2(9.1%) have no pain (Asymptomatic) and presented with infertility. In Retroperitoneal Varicocelectomy, 3(13.60%) were with pain history in testicular region and 16 (72.70%) had pain and heaviness in scrotal area and 3 (13.60%) were asymptomatic and had infertility. Patients treated with subinguinal microvaricocelectomy, on average, had pain history of 16.44 ± 3.43 months and in retroperitoneal group on average the pain history was 15.677 ± 6.50 months.

In Subinguinal Micro-varicocelectomy Group, 16(72.70%) patients classified as Grade II varicocele and 6(27.30%) were as Grade III and in Retroperitoneal Varicocelectomy, 4(18.22%) were Grade I, 5(22.73%) were Grade II and 13(59.55%) were classified as Grade III varicocele patients as shown in Graph. Visual analog score for postoperative pain of Subinguinal Microvaricocelectomy was statistically significantly less than retroperitoneal varicocelectomy patients (p value 0.012).

Fig. 1: comparison of varicocele grades according to treatment groups



DISCUSSION

In Pakistan, retroperitoneal or an inguinal approach is traditionally used for varicocelelectomy. This study was conducted to determine the suitable technique to be used for treatment of varicocelelectomy. Testicular pain has been associated with varicocele. Majority of the patients presented with this complaint. Varicocele associated pain was usually described as dull ache or scrotal heaviness in the ipsilateral testicle which is aggravated by standing or physical activity and relieved by lying supine. Pathophysiology of pain in varicocele is due to dilatation of pampiniform plexus of veins and swelling which lead to pressure effect, ischemia and pain. Pain due to varicocele affects the social life of patients as well as restricts the healthy activities (exercise). Previous study had shown that the pain issue was resolved in 88% of the patients where as in 4 % pain was partially resolved and in 6% no change in pain was observed after treatment with subinguinal microvaricocelelectomy. (Önder Yaman et al., 2000)

In our study, 3 (13.60%) Subinguinal Micro-varicocelelectomy treated patients had history of pain in testicular region, 16(72.70%) were with heaviness in scrotal area and 2(9.1%) have no pain (Asymptomatic) and presented with infertility. In Retroperitoneal Varicocelelectomy, 3(13.60%) were with pain history in testicular region and 16(72.70%) had pain and heaviness in scrotal area and 3(13.60%) were asymptomatic and had infertility. The cause of hydrocele formation was due to lymphatic obstruction that drains scrotum as well as testis. Postoperative hydrocele formation after varicocelelectomy is due to blind dissection of lymphatic channels that lead to fluid accumulation around the testicle in scrotum. In microsurgical varicocelelectomy, under microscope we can preserve the lymphatics and minimize the chance of hydrocele formation and recurrence was observed in only retroperitoneal varicocelelectomy. In retroperitoneal varicocelelectomy, some retroperitoneal and all cremasteric veins and all collateral venous channels are missed and this would explain the high recurrence rate of this procedure. Varicocele is the most common and correctable cause of male infertility. Varicocelelectomy, performed for symptomatic varicocele has a proven effect on male factor infertility problems (Marmar et al). In infertile male, in vitro fertilization is an only procedure to achieve paternity. In vitro fertilization is a highly expensive procedure and implied potential risk for both mother and new born. These patients can benefit of intrauterine insemination and natural pregnancy

through minimal invasive and less expensive procedures like subinguinal microsurgical varicocelelectomy. In the semen analysis, subinguinal microvaricocelelectomy was statistically significantly effective in terms of motility and retroperitoneal varicocelelectomy was effective in term of sperm morphology.

Patients treated with subinguinal microvaricocelelectomy, on average, had pain history of 16.44 ± 3.43 months and in retroperitoneal group on average the pain history was 15.677 ± 6.50 months. In Subinguinal Micro-varicocelelectomy Group, 16(72.70%) patients classified as Grade II varicocele and 6 (27.30%) were as Grade III and in Retroperitoneal Varicocelelectomy, 4(18.22%) were Grade I, 5(22.73%) were Grade II and 13(59.55%) were classified as Grade III varicocele patients.

In the previous studies it has been observed that the microscopic procedures take more time than the open procedures (Al-Kandari et al., 2007). In Subinguinal Microvaricocelelectomy Group, average operation time was 66.80 ± 3.26 minutes and in Retroperitoneal Varicocelelectomy, average operation time was 46.60 ± 14.80 minutes. Operation time of Subinguinal Micro-varicocelelectomy was more than retroperitoneal Varicocelelectomy.

During 3 months follow up in Subinguinal Micro-varicocelelectomy treated Group, only in 2(9.09%) hydrocele occurred and in Retroperitoneal Varicocelelectomy, only 5(22.72%) hydrocele was observed. The cause of hydrocele formation was due to lymphatic obstruction that drains scrotum as well as testis. Postoperative hydrocele formation after varicocelelectomy is due to blind dissection of lymphatic channels that lead to fluid accumulation around the testicle in scrotum. Hydrocele is usually painless. It can cause swelling, pain, redness; can get infection, trauma and rupture. A large hydrocele may obstruct the testicular blood supply leading to testicular atrophy and subsequent infertility. The low rate of hydrocele formation in microsurgical varicocelelectomy group may be because of our aggressive efforts in preserving the lymphatics. Previous studies showed that no hydrocele was observed in microvaricocelelectomy whereas in open inguinal, the hydrocele ranges from 13-20% (Al-Kandari et al., 2007). In contrast a study showed that the hydrocele occurred in 15.4% patients treated with microvaricocelelectomy he also suggests that the patients should be followed for 2 years. (Nees and Glassberg, 2011). Szabo and Kessler reported that lymphatic obstruction was the cause of hydrocele formation because the protein concentration of the hydrocele fluid was consistent with that of lymphatic fluid. Less hydrocele in varicocelelectomy procedures are due to preservation

of lymphatics under microscopes (Campbell & Walsh, 2012)

CONCLUSION

Subinguinal Microvaricocelectomy takes more time during surgical procedure as compared to Retroperitoneal varicocelectomy but the outcome in term of pain is less in microvaricocelectomy. Thus it is suggested that the microvaricocelectomy should be opted for treatment of patients with varicocele.

REFERENCES

1. AL-Kandari, A. M., Shabaan, H., Ibrahim, H. M., Elshebiny, Y. H. & Shokeir, A. A. 2007. Comparison of outcomes of different varicocelectomy techniques: open inguinal, laparoscopic, and subinguinal microscopic varicocelectomy: a randomized clinical trial. *Urology*, 69, 417-20
2. Barbara E. Hedvig D, McClure M.D., Varicocele Radiological diagnosis and treatment. *RCNA*, - 1991; 29 (3):619-627.
3. Ding, H., Tian, J., DU, W., Zhang, L., Wang, H. & Wang, Z. 2012. Open non-microsurgical, laparoscopic or open microsurgical varicocelectomy for male infertility: a meta-analysis of randomized controlled trials. *BJU Int*, 110, 1536-42
4. Masami Watanabe, Atsushi Nagai, Norihiro Kusumi, Hiromu Tsuboi, Yasutomo Nasu and Hiromi Kumon, 2005. Minimal invasiveness and affectivity of subinguinal microscopic varicocelectomy: a comparative study with retroperitoneal high and laparoscopic approaches *International Journal of Urology* 12, 892–898
5. Nagler HM, Luntz RK, Martinis FG. 1997. Varicocele. In: Lipshultz LI and Howards SS, Mosby L, (eds) *Infertility in the male*: p 336-359.
6. Nees, S. N. & Glassberg, K. I. 2011. Observations on Hydroceles following adolescent varicocelectomy. *J Urol*, 186, 2402-7.
7. Önder Yaman, Erol Özdiler, Kadri Anafarta, Orhan Göğüş. 2000. Effect of microsurgical subinguinal varicocele ligation to treat pain *Urology* Volume 55, Issue 1, Pages 107–108
8. Palomo A. 1949. Radical cure of varicocele by a new technique: preliminary report. *J Urol*; 6: 604-7
9. Rabbani K, Mehmood T, Rabbani F. Role of varicocelectomy in the management of male infertility *P. J med Health sci* 2010; 3: 143.
10. Sinescu, Voinea, Pieleanu, I. Manea, . Gagi Chibelea, B. Hainealæ1, A. Preda. Neagoe, G., 2010. Dohle Revista Impact of subinguinal microscopic varicocelectomy on sperm quality – first romanian experience . *Românæ de Urologie* nr. 4 / 2010; | 9:22-26.
11. Turek PJ. Tanagho EA, McAninch JW, (eds). *Male infertility* In: *Smith's General Urology*. 17th ed. New York: mcgraw-hill companies; 2008. P. 684-717.
12. Walsh PC, Retik AB, Vaughan ED, Wein AJ, eds. *Campbell's Urology*. 8th ed., Philadelphia: WB Saunders, 2002; 1487.