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"Shaeer's vasovasostomy" for bypassing inguinal obstruction of the vas deferens : intra-peritoneal versus extraperitoneal approaches

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ABSTRACT

Introduction **: Iatrogenic obstruction of the vas deferens within the inguinal canal can be managed by direct onsite vasovasostomy. However, in cases with large defect of the vas, the anastomosis may be under tension. Dissecting through the site of a previous hernia repair is tedious, and may lead to recurrence of the hernia.**

Aim of the Work **: The present work reports on an alternative technique that avoids the latter drawbacks.**

Patients and Methods **: A total of 15 patients with azoospermia due to inguinal obstruction of the vas deferens underwent bilateral repair. Ten cases were operated upon using the classical transperitoneal approach. Under laparoscopic vision, the pelvic vas was rendered intraperitoneal and its lateral-most end was clipped at the internal inguinal ring, cut and extruded from the abdomen through a port in the external inguinal ring. Vasovasostomy was performed, bridging the retrieved stump of the pelvic vas with the scrotal vas. Five patients were operated upon through the extraperitoneal approach.**

Results **: By the end of one year. Nine out of the 15 cases showed an average sperm concentration of 17 ± 3.5 million/ml.**

Conclusion **: Pelvi-scrotal vasovasostomy (PSVV) or Shaeer's vasovasostomy can be offered as a cost-effective and successful alternative or supplement to intracytoplasmic sperm injection (ICSI), for cases with iatrogenic large defects of the vas deferens within the inguinal canal. The transperitoneal approach is more convenient in post-herniotomy and post-herniorrhaphy cases.**

Key words *: vas deferens, inguinal, obstruction, vasovasostomy, hernia*

I. INTRODUCTION

Inguinal surgery may be complicated with obstruction of the vas deferens in the inguinal canal. Childhood herniotomy has been reported as a cause for inguinal obstruction in up to 26.7% of cases [3]. Hernioplasty in adults is another common cause for inguinal obstruction of the vas, due to the injurious effect of the mesh and the elicited fibrous tissue reaction [2].

Fatherhood in such a condition is possible through intracytoplasmic sperm injection (ICSI) or inguinal vasovasostomy. The latter is hindered by a number of obstacles such as the extensive fibrosis encountered in the site of previous surgery, especially if a mesh had been placed, rendering dissection very difficult. Difficult inguinal surgery may eventually lead to injury of the testicular vessels and testicular atrophy, and may also lead to recurrence of the hernia. Moreover, healthy remnants of the vas deferens may not be found at all. If found, the patent segments may be wide apart, making approximation difficult and making the anastomosis under tension.

Our alternative technique described here-in : "Pelvi-Scrotal Vasovasostomy" (PSVV) [4, 5, 6], first described in 2003 [4] is a technique by which the pelvic vas is harvested laparoscopically, detached from the internal ring, medialized in the same way performed for an abdominal testis and pulled out of the pelvis through the external inguinal ring. It is then anastomosed to the scrotal vas, bypassing the inguinal vas. A similar technique was also described by Anthony *et al.* as a case report in 2004 [1].

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II. MATERIALS AND METHODS

Pelvi-scrotal vasovasostomy, "PSVV" or "Shaeer's vasovasostomy", was performed in 15 patients with obstructive azoospermia and history of bilateral inguinal surgery. The decision for PSVV was taken during surgery as dictated by intraoperative vasography.

Ten patients were operated upon by the classical transperitoneal approach. In five, the extraperitoneal approach was tried. In the transperitoneal approach, three ports were inserted, one 10mm port inserted peri-umbilically for visualization, and two 5mm working ports inserted on either sides, midway between the umbilicus and the anterior superior iliac spine.

The peritoneum overlying the vas deferens was cut open. The vas was picked up and freed from the surrounding tissues (Figure 1) [5].

Clips were applied to occlude the vas and its vessels at the internal inguinal ring. The vas was cut off the internal ring just proximal to the clips. The cut vas was picked up by a right angled instrument inserted through the external inguinal ring. The instrument holding the vas was pulled out, extruding the pelvic vas to the surface (Figure 2) [5].

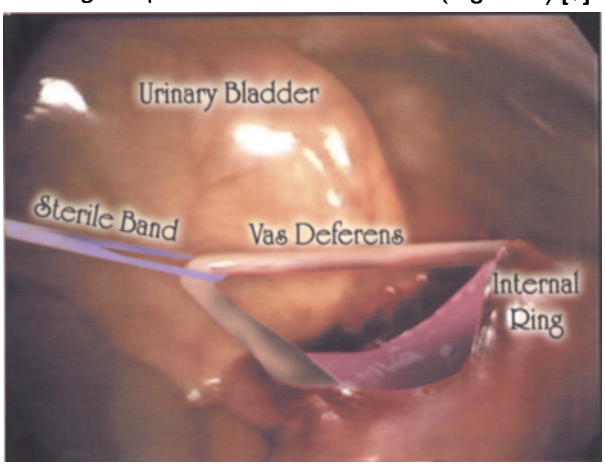

Figure 1 : Vas deferens dissected off the posterior abdominal wall.

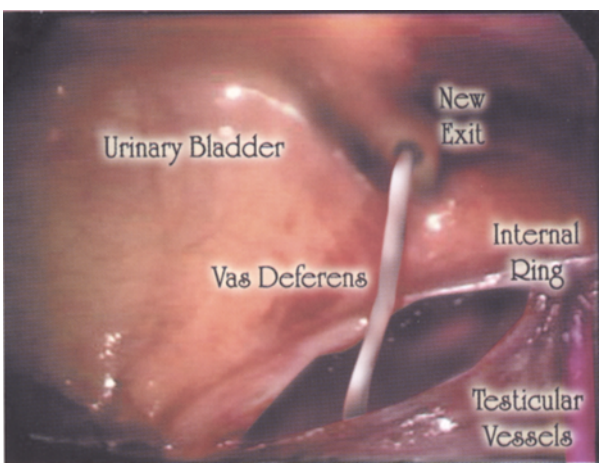

Figure 2 : Vas deferens extruded through the external inguinal ring.

In the process of extracting the pelvic vas, an indirect passage was created by making a short superficial incision in the rectus abdominis muscle or the conjoint tendon, then bluntly widening a plane between muscle fibres down to the peritoneal cavity. A cutting diathermy current was applied to the dissecting instrument to facilitate entry followed by a coagulating current applied to the instrument as it resides in the passage, to decrease the healing power of the boundaries of this passage.

The cranial stump of the vas was tested for patency by vasography. The caudal vas was tested by irrigation and aspiration, then testing the aspirated fluid for spermatozoa. Simultaneous correction of concomitant obstruction was performed by epididymovasostomy in two cases and transurethral resection of the ejaculatory ducts in one.

The retrieved pelvic vas was anastomosed to the scrotal vas. End to end anastomosis was performed under optical magnification.

Average laparoscopy time was 35 minutes. Patients were discharged the second day following surgery, and return to work was within 4 days.

As for the extra-peritoneal approach, a balloon dissector was inserted through a peri-umbilical incision, and used to develop the extraperitoneal space. In one out of five cases, the vasa were very easy to identify and retrieve, relative to the classical approach. However, in the rest of the four cases, the field was completely blocked by adhesions probably resulting from the previous surgery. The classical (trans-peritoneal) approach was resorted to.

III. RESULTS

Nine of the 15 cases had an average sperm concentration of 17 ± 3.5 million/ml. Average motility was 35%, with 10% forward progressive. Three patients conceived their wives naturally. Ten patients conceived their wives by intrauterine insemination.

IV. DISCUSSION

Shaeer's Vasovasostomy offers an easier way for natural conception in an otherwise difficult-to-manage patient group. Inguinal vasovasostomy within the site of a previous hernia repair can be very difficult considering the fibrosis at the site. Recurrence of the hernia is possible. Injury of the testicular vessels entangled in the fibrous tissue is also possible. The vas can be difficult to find, and if found, may be occluded or devitalized. A large gap may separate the healthy ends of the vas, exerting tension on the anastomosis.

This has reflected on the success rate: post-operative appearance of sperm in 39% of patients [3], compared to 60% in our series [5].

In Shaeer's Vasovasostomy, the whole site is avoided and bypassed. A more viable and lengthy stump of the cranial vas is available for anastomosis with the caudal vas. The incisions required for managing bilateral cases are much smaller than those required for bilateral inguinal vasovasostomy.

Concomitant obstruction must be diagnosed and resolved. This increases the patency rate to a great extent [3].

In our experience, the trans-peritoneal approach is the method of choice, considering the adhesions resulting from the previous hernia repair that hinder the pre-peritoneal approach.

In comparison to ICSI, Shaeer's vasovasostomy offers a more cost-effective solution if more than one conception is the aim. The low natural conception rate in Shaeer's vaso-vasostomy may be attributed to concomitant female factor, or weak motility on account of anti-sperm antibodies or associated abnormalities such as varicoceles. Rectification of these factors and longer follow-up periods may reveal a higher natural conception rate. Even in the presence of a low natural conception rate, ejaculation of sperm can help the couple conceive by less costly methods such as intrauterine insemination. The results of ICSI using ejaculated sperm are better than they are with testicular sperm [7].

V. CONCLUSION

Shaeer's Vasovasostomy is a practical approach to surgical management of inguinal obstruction of the vas deferens, providing a reliable anastomosis, simultaneous bilateral repair with lower morbidity and shorter convalescence. The transperitoneal approach is more convenient in post-herniotomy and post-herniorrhaphy cases.

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