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A COMPARISON OF OPEN-END VERSUS CLOSED-END VASECTOMIES:
A REPORT ON 6220 CASES

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ABSTRACT

This study was done to determine if there was a difference in results when both vas ends were closed or when the prostatic end was closed and the testicular end left open. The author performed 6220 vasectomies between June 1, 1972 and June 1, 1992. The first series consisted of 3081 vasectomies in which both ends of the vas deferens were closed. The second series consisted of 3139 vasectomies in which the testicular end of the vas deferens was left open while the prostatic end only was closed. No portion of the vas was excised. Congestive epididymitis was diagnosed in 6% of cases utilizing closed-end vasectomy and 2% of cases where the open-end vasectomy was performed. Open-end vasectomy is recommended because the incidence of congestive epididymitis is reduced.

INTRODUCTION

There is no agreement on the management of the divided vas deferens during vasectomy. Leaving the testicular end open has been advocated in order to reduce hydrostatic pressure in the epididymis (1,2). The technique of dividing the vas deferens without removing any portion, coagulation of the lumen using hot wire cautery and burying the prostatic end in its sheath using a Weck clip was first utilized by the author in June 1972 (3). After 3081 vasectomies in which both ends of the vas deferens were coagulated and the prostatic end buried in its sheath, it was decided to perform a series of open-end vasectomies, following the suggestion of Silber (4).

MATERIALS AND METHODS

All operations were performed by the author under local anesthesia. A 3 mm incision was made in the anterior central scrotum using a razor blade or scalpel until November 1989 when the "No Scalpel" technique (5) was begun. The vas deferens was brought out of the small opening as a loop, the sheath and vessels were dissected away and the vas deferens divided. No portion of vas was removed.

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In the first series of 3081 vasectomies, the lumen of both ends of the vas deferens was coagulated for a distance of 10 mm using a disposable, battery operated, hot wire cautery. In the remaining 3139 cases, the same technique was used except only the lumen of the prostatic end of the vas was cauterized a distance of 10 mm, leaving the testicular end open. In all cases, the prostatic end of the vas deferens was further isolated by having it retract distally into its sheath and sealing it there using a single medium size stainless steel hemoclip (Weck). The two vasa were operated through the same incision or puncture. The thin medial septum does not deter the use of one incision. Operating time averaged six minutes (6). An assistant was used which added speed and efficiency to the procedure.

Following the operation, the patient was left in the supine position for 30 minutes with compression over the surgical site. Patients were instructed to obtain semen examinations at two, four and twelve months postoperatively. Patients were instructed to return to the office or call if any problems resulted. It was found to be unnecessary to see each patient routinely postoperatively. The patients were followed-up by telephone or office visits.

All records were reviewed for failure, infection, and hematoma. To study the incidence of congestive epididymitis, the last 300 vasectomies in which both ends were closed were compared with the first 300 vasectomies in which the testicular end was left open.

RESULTS

A total of 6220 vasectomies were performed between June 1, 1972 and June 1, 1992. This total was made up of two series: The first series of 3081 between June 1, 1972 and Sept. 30, 1979, was known as a closed-end vasectomy. The second series of 3139 between Oct. 1, 1979 and June 1, 1992, was known as open-end vasectomy.

One failure occurred with each technique (Table). The failure in the first series had three negative sperm counts through a 12-month period postoperatively. Nine years later in July 1987, his wife became pregnant and at that time, his sperm count totaled 7 million. The failure in the second series was successfully reoperated using the same technique six months later. There were two patients who developed a fistula that allowed 0 to 2 dead sperm/hpf for one year before the sperm count became negative.

Two hematomas occurred in the second series, none in the first. They were noted on the third and fourth post-operative day, respectively, when the patients complained of a mass in their scrotum. Neither required drainage and spontaneously reabsorbed in two to three months.

TABLE: COMPLICATIONS OF THE TWO SERIES

	CLOSED-END SERIES	OPEN-END SERIES
NUMBER	3081 VASECTOMIES	3103 VASECTOMIES
PERIOD	6/1/72-9/30/79	10/1/79-4/1/92
FAILURES	1	1
INFECTIONS	1	2
HEMATOMAS (SMALL)	0	2
CONGESTIVE EPIDIDYMITIS (300 PATIENTS)	18 (6%)	6 (2%)

Three serious infections occurred. One was in the first series and two were in the second. The one in the first series, and one in the second required an incision and drainage. The third patient developed swelling and infection on the 14th post-operative day and was hospitalized by a surgeon in a nearby community. No positive cultures were obtained in any of these three patients.

Congestive epididymitis was the most common postoperative complaint. It was characterized by pain and tenderness of the testicle on one side. With very few exceptions, it occurred during the first 12 months postoperatively and usually occurred following trauma to the scrotum or after unusual physical or sexual activity. Physical exam revealed a tender tense epididymis and testes without redness or fever. Slight swelling of the epididymis and testes was common. The condition was self-limiting, lasting three to seven days. The patients were treated with hot baths, scrotal support, analgesics, anti-inflammatory drugs and rest. In the last 300 patients of the first series, 18 cases (6%) of congestive epididymitis were found. In the first 300 patients of the second series, 6 cases (2%) were found (relative risk 3.0; 95% confidence interval 1.2-7.5).

A few small 3 mm to 10 mm granulomas occurred at the site of the vasectomy, both in the closed- and open-end series. These were non-tender and did not require treatment, but were seen because the patient discovered a lump and wanted assurance that it was not a tumor.

Vasovasostomy, using micro surgical technique, was performed by the author on seven patients in the first series and thirty-seven patients in the second series. A review of these surgeries is the subject of a future report. Reanastomosis of the vas deferens in these two series was easier to perform than on vasectomies done with other techniques because: No portion of the vas was removed, a steel clip marked the abdominal end of the vas and the vasectomy had been done in the middle third of the scrotal vas.

DISCUSSION

Prior to the introduction of laparoscopy for sterilization of the female, vasectomy was the method of choice in couples requesting sterilization. However, since 1973, vasectomy has not been as popular as laparoscopy in the USA (7). Simplification of the vasectomy procedure could renew its popularity.

Rolnick (8) first described the importance of closing the vas sheath in order to prevent vasectomy failure. He pointed out that unless the sheath is disrupted and closed, it will act as a conduit which epithelializes and allows sperm to pass between open vas ends.

Esho and Cass (9) reviewed reported series of vasectomy techniques and found that when interposition of the fascial sheath was added to other techniques, it reduced the recanalization rate to zero.

Coagulation of the vas ends and interposition of tissue using the vas sheath was first advocated by Schmidt in 1966 (10). These two steps were utilized in the present series of vasectomies. The success rate of two failures in 6220 tends to support this technique.

The author believes placement of the clip, in sealing the sheath over the prostatic vas, is most important to the success of this technique. The clip was placed so as to seal the prostatic end of the vas within its sheath. The clip is not placed on the vas itself. The closing end of the clip should also include the edge of the sheath along the testicular end of the vas at a point 1 to 2 cm from its cut end. This not only seals the sheath over the prostatic vas, but also anchors the two ends apart. A suture could be substituted in this step of the procedure but a clip was found to be easier, faster and more efficient.

By not removing any portion of vas and leaving the testicular end open, there may be an increased success rate following vaso-vasostomy as previously suggested by Silber (11). The presence of a spermatic granuloma may increase the success of vaso-vasostomy by decreasing the hydrostatic pressure in the testicular vas and epididymis.

In comparing the two series, there was no statistical difference in failure, infection, or bleeding, but there was a difference of congestive epididymitis from 6% in the first series to 2% in the second. The finding of decreased congestive epididymitis post-vasectomy when the testicular end of the vas has been left open was confirmed in comparing these two series.

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