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LAPAROSCOPY FOR CRYPTORCHIDISM

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ABSTRACT

Laparoscopy is suggested as an accurate way to localize the non-palpable testicle or to diagnose anorchia without an abdominal exploration. From our early experience laparoscopy will aid greatly in the management of the intra-abdominal testicle.

There have been many debates recently over how to localize the non-palpable cryptorchid testis.[1, 2] Spermatic arteriography is difficult, unreliable and involves a fair risk.[3, 4] Gonadal venography is safer but on the right side it can be difficult and can be erroneous even in the best hands. Venous valves frequently prevent adequate reflux of contrast material and confuse the interpretation. Ultrasound, radionuclide scanning and thermography generally have not been useful. An electron microscopic scan may be helpful (fig. 1) in adults but rarely is definitive in children. None of these techniques has been sufficiently reliable to replace surgical exploration.

Accurate localization of these non-palpable cryptorchid testes short of laparotomy is important for proper surgical management. According to Levitt and associates no testicle will be found in the inguinal canal in >20 per cent of such cases.[1] In 4.4 per cent of the cases there will be anorchia, which would necessitate an extensive intraperitoneal exploration for diagnosis. In 16 per cent the testes will be intraperitoneal, much like an ovary in the female subject. In these cases a midline intraperitoneal incision would be preferable to the standard inguinal approach.[2] Since testicular agenesis can be seen in patients with non-palpable testes many needless abdominal explorations could be prevented by accurate localization. For the 16 per cent of patients with high intra-abdominal testes localization can prevent the so-called "negative" inguinal exploration when the testis higher in the abdomen is missed and can permit a more direct approach without fruitless exploration of the inguinal canal.[5]

A technique that has not yet been reported for this dilemma is laparoscopy. Our early experience indicates that laparoscopy may be advisable for the study of non-palpable cryptorchid testes.

CASE REPORTS

Case 1. A 26-year-old man was seen for infertility. The sperm count averaged 26,000,000 per cc but the motility was persistently <5 per cent. The right testicle was situated normally in the scrotum but the left scrotal sac was empty and the left testicle could not be palpated in the groin. Because no testis was ever palpable on the left side a urologist years ago had decided that there probably was no testis or, if present, it was so high that a corrective operation was unlikely to succeed.

Laparoscopy demonstrated a normal vas deferens entering the internal ring medially and the internal spermatic vessels laterally. The internal ring was enlarged, suggesting a congenital indirect hernia. We concluded that the left cryptorchid testis was present in the groin within the inguinal canal and a small 1½-inch incision was used to excise it. Histologic sections revealed complete hyalinization of the seminiferous tubules.

Case 2. A 5-year-old boy had an unsuccessful attempt elsewhere to bring down a high cryptorchid testis on the right side, resulting in loss of that testis. On the left side the testis also was non-palpable and the scrotum was empty. An attempt at orchiopexy on this side elsewhere was unsuccessful and we worried whether this testis might have been lost too. A human chorionic gonadotropin stimulation test demonstrated a positive testosterone response. Laparoscopy revealed normal vas deferens and spermatic vessels on the left side leading into the internal inguinal ring. The vas was under a great deal of tension and 2 surgical clips could be seen at the internal inguinal ring. However, the clips were not on either the vessels or the vas. Thus, after locating the left testis and its vessels a successful orchiopexy was done by extensive dissection of scar tissue and restraining adhesions.

Case 3. A 23-year-old man with no infertility problems had an empty left scrotum since birth and no testis was palpable in the groin. Because of the high potential risk of cancer in a cryptorchid testis an extensive surgical exploration was planned. However, laparoscopy revealed no vas deferens, spermatic vessels or an internal inguinal ring. Therefore, surgical exploration was considered to be unnecessary. Indeed, subsequent exploration (performed anyway because of our early and tentative experience with this approach) did not reveal a testis or vas.

DISCUSSION

If the testis is palpable in the inguinal area (as in the majority of cases) no dilemma exists and a simple inguinal orchiopexy is performed. If neither testis is palpable a human chorionic gonadotropin stimulation test is performed to ascertain whether there is any testicular tissue. If this test is negative we believe that it is safe to abandon any further thought of operation. If

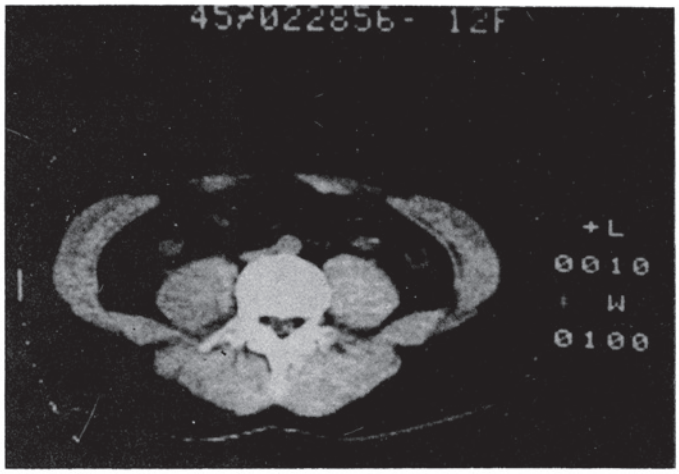

FIG. 1. Electron microscopic scan of 21-year-old man localizing bilateral intra-abdominal non-palpable testes. Reprinted with permission from Silber, S. J.: Microsurgery. Baltimore: The Williams & Wilkins Co., 1979.

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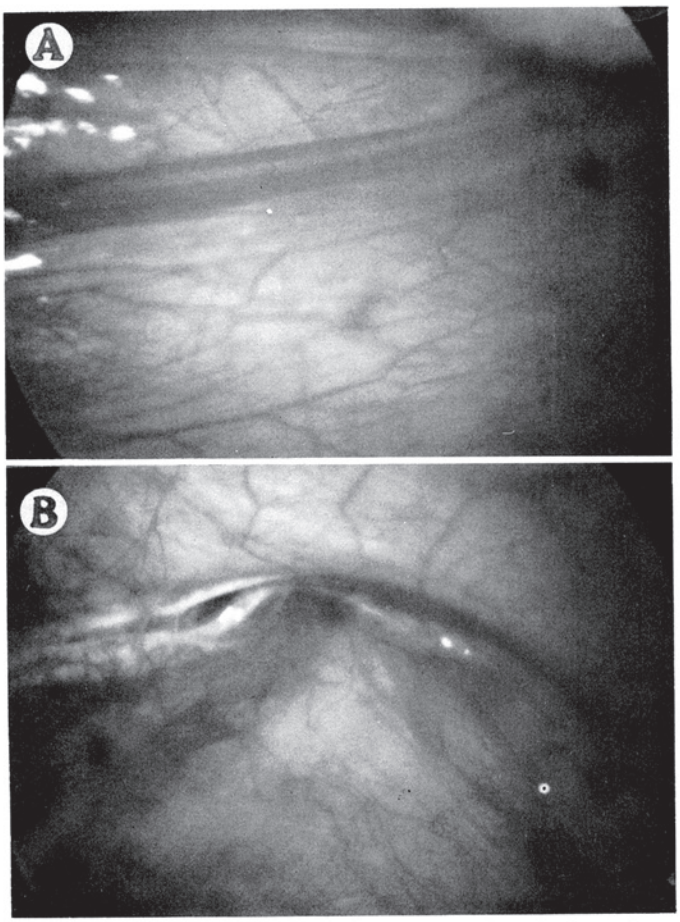

FIG. 2. *A*, internal spermatic vessels can be traced easily from below renal bed down to internal inguinal ring. *B*, vas deferens can be traced from internal inguinal ring (which has patent processus vaginalis with inguinal cryptorchid testis) down toward prostatic region.

only 1 testis is non-palpable or if the human chorionic gonadotropin stimulation test is positive we proceed to laparoscopy.

Through the laparoscope the presence of an intra-abdominal testis is immediately obvious. If a testis is not seen the internal spermatic vessels are traced down to the internal inguinal ring and the vas deferens is traced out of the internal ring down toward the prostatic region (fig. 2). Such findings indicate that the testis is located in the inguinal canal. If no testis, spermatic vessels and vas are seen testicular agenesis is indicated and no surgical exploration is necessary.[2] If an intraperitoneal testis is discovered a technically demanding autotransplantation with microvascular anastomoses may be required. Therefore, it is not advisable to stumble upon such a finding inadvertently just by trying to extend awkwardly a standard inguinal incision, especially after the inferior epigastric recipient vessels may already have been sacrificed. Thus, laparoscopy should become a valuable tool in the surgical management of non-palpable cryptorchid testes.

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EDITORIAL COMMENT

These authors describe an innovative use of the laparoscope in the management of undescended testes. They must be complimented for their creativity.

There are several statements in this paper with which I am not in agreement. It has not been my personal experience nor have I found evidence in the literature that 40 per cent of impalpable testes are owing to absence of the testis. I believe that this statement is misleading. Visualization of the vas by laparoscopy or by any other means does not assure a testis will be present. I have personal experience with several cases and am aware of many others reported in which the vas ends blindly with an absent testis. In such cases the vas descends into the inguinal canal. Laparoscopic identification of the vas in such patients could be misleading in that this does not assure a testis will be found. I have personal experience with many testes that lie deep to the internal inguinal ring but are not intraperitoneal. By intraperitoneal I mean invested with a double fold of peritoneum comparable to the anatomical relationship of the normal ovary. I refer to these as, "intra-abdominal by extraperitoneal testes" and this is a frequent finding. Therefore, not all abdominal testes are intraperitoneal.

The place of the laparoscope in the management of patients with impalpable undescended testes must be subjected to the test of time. My compliments to the authors on a creative and innovative suggestion for the use of the laparoscope in the management of cryptorchidism.

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REPLY BY AUTHORS

We certainly agree that the presence of a vas does not guarantee the presence of a testicle. However, this should pose no problem. If the vas is seen entering the internal ring then at least it is certain that there is no intra-abdominal testis. A testis that lies just slightly deep in the internal ring can be visualized easily with the laparoscope (along with the vas deferens and spermatic vessels leading into it), although it might be considered retroperitoneal. However, such a testis usually can be brought into the scrotum by a conventional orchiopexy. It is the high intra-abdominal testis, that is always intraperitoneal, and requires definitive preoperative localization.