Cryptorchid testis – An unusual intra-abdominal location

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A B S T R A C T

A 14-month old boy who had a history of a complex gastroschisis underwent closure at birth and was subsequently followed for an undescended right testicle. Diagnostic laparoscopy showed the testicle to be in a retroperitoneal location just inferior to the right kidney, and the internal ring was closed. We report our findings and review the unusual intra-abdominal locations of an undescended testicle.

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Undescended testes (UDT) present in up to 40% of males born with gastroschisis in recent retrospective reviews. The majority undergo spontaneous descent so a watch-and-wait approach is recommended [1–3]. Generally, an intra-abdominal location is less common than an intracanalicular location; unusual previously described intra-abdominal locations include retrovesicular, pericecal and peri-hepatic locations [5,6].

1. Case report

A 14-month old previously 36-week gestational age male with a prenatal diagnosis of gastroschisis underwent silo placement and eventual abdominal wall closure. He was noted to have a right undescended testicle. His gastroschisis treatment was complicated by an adhesive small bowel obstruction requiring operative adhesiolysis. The right testicle remained undescended on routine follow-up visits. He underwent diagnostic laparoscopy with a plan for either a one or a two stage orchiopexy versus orchiectomy depending on intra-operative findings. The right internal ring was closed and a diminutive vas deferens coursed medial to lateral from its expected origin, terminating just superior to the ring (Fig. 1). A tubular structure was identified emanating from the internal ring and coursed proximally up the retroperitoneum, behind the colon and lateral to the right ureter, terminating at a testicular remnant just inferior to the right kidney (Fig. 2). Testicular vessels were noted to course a short distance between this remnant and the inferior vena cava (IVC) and aorta. The testicular remnant was excised and sent for histological assessment. Final pathology showed embryonic mesonephric remnants and remnants of the vas deferens and epididymis, but no seminiferous tubules, normal residual seminiferous tissue, or residual Leydig cells. There was focal fibrosis and calcifications, but no neoplastic changes. The child tolerated the procedure well.

2. Discussion

Undescended testes (UDT) present in up to 40% of males born with gastroschisis in recent retrospective reviews. The majority undergo spontaneous descent so a “watch-and-wait” approach is recommended [1–3]. Generally, an intra-abdominal location is less common than an intracanalicular location, however with associated gastroschisis nonpalpable intra-abdominal UDT are common [1,3]. Unusual previously described intra-abdominal locations in patients without gastroschisis include retrovesicular and pericecal locations [5,6]. In the setting of a history of gastroschisis, previously mentioned intra-abdominal locations of UDT include peri-renal, peri-hepatic and peri-aortic locations [2,4], but the nature of these presentations were not fully described as these cases were presented as part of larger retrospective chart reviews addressing the question of immediate orchiopexy versus expectant management. The current case presentation details the anatomy of this unusual peri-renal location of UDT.

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It appears as though testicle had arrested descent very close to its origin at the renal hilum. This is supported by the fact that the testicular vessels were short with a direct trajectory to and from the IVC and aorta respectively. The inguinal ring was closed and although the vas deferens coursed toward it, it did not enter the ring. Additionally, what appeared to be the gubernaculum coursed from the testicular remnant, and traversed the internal ring. This suggests that even though the gubernaculum had an appropriate descent through the internal ring, the physiologic milieu of the gastroschisis was such that the testicle did not descend along the gubernacular path. The factors that contribute to appropriate testicular descent are thought to include physiologic mediators/growth factors, patent processus vaginalis, intra-abdominal pressure and androgens [7]. The role of intra-abdominal pressure has been studied in animal models and retrospective reviews; it is thought to aid in testicular descent by working synergistically with the gubernacular attachment to the testis, although this remains controversial [8–10]. The gastroschisis and associated decreased abdominal pressure may account for the fact that the gubernaculum descended appropriately (secondary to successful outgrowth caused by testis-secreted insulin-like factor 3) but not the testicle did not.

Authors who advocate orchiopexy for UDT at the time of gastroschisis closure often argue that delayed orchiopexy can be complicated by abdominal adhesions. This case illustrates the feasibility of laparoscopic exploration of the abdomen despite previous gastroschisis closure. Additionally, it demonstrates the need for complete abdominal exploration evaluating the entire path of testicular descent, despite the finding of a closed internal ring, and thereby preventing unnecessary groin exploration.

3. Conclusion

UDT is fairly common in the setting of gastroschisis, and these are often intra-abdominal in location. In a child with a history of gastroschisis, providers should have a high index of suspicion for unusual intra-abdominal locations of UDT which may result in difficulty with orchiopexy, and as such should be part of the informed consent discussion with parents or guardians. Laparoscopy is an excellent tool for diagnosis and treatment in this setting, and may prevent unnecessary groin exploration.

Consent

Written informed consent was obtained from the patient’s mother for publication of this case report and accompanying images. The patient was too young to be able to provide assent. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Conflict of interest

None of the authors have any financial or personal relationships with other people or organizations that could inappropriately influence the work in this study. There has been no source of funding for this study.

References