

Inguinal and Genital Anomalies

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KEYWORDS

• Hernia • Hydrocele • Cryptorchidism • Varicocele • Penile anomalies

KEY POINTS

- Problems of the groin and genitalia are a common presenting complaint in both pediatrician's offices and emergency departments.
- The authors endeavor to provide a comprehensive review of the most common inguinal and genital anomalies encountered by the pediatrician, with a special focus on examination and management. The authors emphasize that the physical examination of the groin and genitalia should compose an important part of every well-child visit.

INTRODUCTION

Problems of the groin and genitalia are a common presenting complaint in both pediatrician's offices and emergency departments. The authors endeavor to provide a comprehensive review of the most common inguinal and genital anomalies encountered by the pediatrician, with a special focus on examination and management.

HERNIA/HYDROCELE

At the regular meeting of the Suffolk District Medical Society on December 26, 1900, Dr E. S. Boland¹ presented his experience in the treatment of infants with hernias. He devised a truss constructed from yarn intended to "assure the natural tendency toward cure in the infantile hernia." This woolen truss was "considered to be a very successful method" in a time when anesthetic risk was formidable.¹

The evaluation and repair of the pediatric hernia has evolved as efficiencies in surgical technique and advances in pediatric anesthesia have occurred. From the management of infant hernias with yarn trusses to immediate operative repair, we do not often consider hernias with the same urgency as in a previous era.² However,

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it remains that hernias are one of the most common presenting complaints in the pediatrician's clinical practice that will necessitate surgical intervention.

Incidence

The incidence of hernias in the pediatric population ranges from 0.8% to 4.4%.³ Hernias are more common in boys than girls by a factor of 5, with a predilection to the right side in 60%.^{4,5} Approximately 10% to 15% may occur bilaterally, and this is more often observed in premature infants. Hernias are more common overall in premature infants, with an incidence of 2% in girls and up to 30% in boys.⁶ It has been reported that the incidence of incarceration within 6 months of birth may approach 30% in premature infants, thus underscoring the necessity of immediate evaluation and planning for possible surgical intervention.

The occurrence of communicating hydrocele is difficult to separate from that of a hernia because they often coexist due to similar pathophysiology. Although simple, noncommunicating hydroceles may be seen in almost 80% of newborn boys, noncommunicating hydroceles are seen in at least 5% of male neonates per a study by Osifo and colleagues⁷ when they observed hydroceles in boys presenting for neonatal circumcision.

Pathophysiology

The development of the inguinal canal is contingent on the codevelopment of the coelomic cavity and the descent of the gonad in the case of male gender. As the abdominal wall develops, extensions of each layer contribute to the anatomic structure of the inguinal canal and the spermatic cord.

As the gonad passes through the inguinal canal, a portion of the peritoneum evaginates and follows the path of the testis and gubernaculum. This continuous extension of peritoneum is known as the processus vaginalis. The processus vaginalis ultimately develops into the visceral and parietal layers of the tunica vaginalis. In the case of female gender, the gubernacular equivalent will become the ovarian and round ligaments. Should the processus vaginalis remain patent in girls, it then becomes known as the canal of Nuck. Patency of the processus vaginalis and subsequent formation of hernia or hydrocele has been associated with prematurity, low birth weight, connective tissue anomalies, cystic fibrosis, posterior urethral valves, and other syndromic disorders.⁸

Girls more rarely present with hernias, which is classically represented by the focal enlargement of the labia or groin. The ovary may compose part of the herniated contents. One percent of the time, the gonad will be found to be a testis, which occurs in boys with complete androgen resistance, formerly known as testicular feminization. In this rare disorder, a phenotypic girl, often during an evaluation for amenorrhea, will be found to have a normal XY male karyotype, bilateral intra-abdominal testes, and a foreshortened vagina.

The continuity of the processus vaginalis should obliterate above the level of the gonad, thus eliminating unrestricted access between the potential space within the groin and scrotum and the intraperitoneal contents. It has been reported that complete closure of the processus vaginalis on both sides was observed in only 18% of full-term infants; however, it must be noted that this was an autopsy study of only 19 stillborn infants.⁹ A narrowly patent conduit will allow only fluid, thus creating a hydrocele, which is a fluid accumulation within the tunica vaginalis. A widely patent conduit may allow fluid, omentum, bowel, gonads, and so forth, thus creating a hernia.

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