Patterns of surgical causes of inguinoscrotal lesions in neonates in Sohag, Upper Egypt: a single-center experience

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Background/purpose Inguinoscrotal lesions (ISLs) are not uncommon during the first month of life. Most of the lesions are congenital. Although physical examination can detect most of the lesions, differential diagnosis is sometimes difficult. Our objective was to evaluate different patterns and spectrums of surgical causes of ISLs seen in the neonatal period.

Patients and methods This prospective observational study included neonates with surgical causes of ISL presented during the period from June 2015 to September 2016. Neonates with nonsurgical causes of ISL were excluded. All cases were subjected to management strategies that consist of physical examinations, imaging studies accordingly, and surgical repair, when needed. The approval of the ethics committee was obtained. Demographic data, presence of associated anomalies, operative data, and outcome of surgical intervention during neonatal period all were reported and analyzed.

Results There were 63 neonates with surgical causes of ISL. The spectrum of findings was as follows: 28 (44.4%) patients with hernia including complicated hernias, 18 (28.6%) patients with hydrocele, 12 (19%) patients with empty scrotum (unilateral or bilateral), three (4.8%) patients with scrotal anomalies, one patient with torsion, and one patient with hematoma.

Conclusion ISL in neonates carries a wide range of varieties. Although congenital inguinal hernia is the commonest, other causes should be kept in mind for differential diagnosis. *Ann Pediatr Surg* 14:161–164 © 2018 Annals of Pediatric Surgery.

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Introduction

Inguinoscrotal lesions (ISLs) are not uncommon during the first month of life, and most of the lesions are congenital [1,2]. Because these entities constitute a diverse group with widely varied management options, timely and accurate diagnosis is essential [3]. Comprehensive understanding of the presentation is important to help guide medical and surgical management. These patients often present clinically with nonspecific signs such as scrotal swelling and discoloration [4,5]. In many of these cases, clinical examination may suffice to obtain a definite diagnosis. However, other diagnostic tools can play an important role when clinical diagnosis is inconclusive and differential diagnosis is difficult [6]. Ultrasonography is considered the imaging modality of choice for patients with ISL; moreover, it is very important in evaluation of vascularity of the testicles and excludes torsion [7–9].

Objective

Our objective was to estimate the pattern and spectrum of surgical causes of ISLs encountered in the neonate in our region, Upper Egypt.

Patients and methods

This prospective observational study included neonates with surgical causes of ISL presented to the Pediatric Surgical Unit, Sohag University Hospitals, local health insurance hospital, and private sector during the period from June 2015 to September 2016. Neonates with nonsurgical causes of ISL were excluded. The study was approved by the local institutional research ethics committee.

All cases were subjected to management strategies that consist of physical examinations, laboratory investigations, imaging studies accordingly, and surgical repair, when needed. Ultrasonographic assessment of ISL was undertaken routinely for all patients during the study period. Plain radiography was done for some patients suspected of complicated inguinal hernias. Every case is assessed and managed individually, with medical and conservative treatment and elective or emergent surgery.

All results regarding demographic data, presence of associated anomalies, operative data, and outcome of surgical intervention during neonatal period were reported and analyzed.

Results

There were 63 neonates with surgical causes of ISL considered for inclusion in this series. There were 58 (92.1%) boys and five (7.9%) girls. Seven (11%) cases were preterm, with mean gestational age of 37.6 ± 2.1 (34–42) weeks. Mean birth weight was 2700 ± 150 g. Associated congenital malformations were diagnosed in four (6%) cases which included cardiac anomalies in two cases, and single kidney and cleft palate each presented in one case.

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Clinically inguinal and/or scrotal swelling was the commonest presenting symptom. Of these 63 neonates, bilateral lesion was found in 12 (19%) neonates, eight (12.8%) patients were found to have acute presentation, and the remaining had chronic presentation. The causes of acute lesions included complicated hernias (six cases), torsion of an intrascrotal testis (one case), and trauma (one case). Ultrasonographic assessment of ISL was undertaken routinely for all patients during the study period. Plain radiography of the abdomen was evaluated in six cases with complicated hernias (four patients referred to our center with their radiographs).

The spectrum of findings was as follows: 28 (44.4%) patients with hernia including complicated hernias, 18 (28.6%) patients with hydrocele, 12 (19%) patients with empty scrotum (unilateral or bilateral), three (4.8%) patients with scrotal anomalies, one patient with torsion, and one patient with extratesticular hematoma owing to trauma caused by kick (Table 1).

Congenital inguinal hernia (CIH) was the commonest lesion and presented in 28 (44.4%) patients: 24 male and four female patients. It was unilateral in 21 patients and bilateral in seven patients. Complete hernia reaching the bottom of scrotum was reported in 15 cases. Complicated CIH was documented in eight cases in the form of strangulated hernia in three neonates, irreducible/obstructed hernia in three cases, and hydrocele of hernia sac in two patients. Complicated hernia presented as a tender palpable swelling in the inguinoscrotal region. Manifestations of intestinal obstruction were associated in two cases, and strangulation with no vascular markings was observed in three cases. Surgery was the treatment of choice in all neonates with CIH and was performed as urgent surgery (surgeries to be performed necessarily today) in complicated CIH and as a semiurgent surgery (surgeries to be performed soon but not necessarily today) in all other patients to prevent the risk of complications. Regarding postoperative complications, mild wound infection was reported in one case, which was managed conservatively (Fig. 1).

Hydrocele was the second common ISL documented in 18 (28.6%) patients: unilateral in 14 cases and bilateral in four cases. Free vaginal hydrocele was observed in 14 neonates, and encysted hydrocele of the cord was found in four cases, which is a cystic lesion that has thin wall with clear fluid and is separated from the testis and epididymis and displaces them inferiorly. Surgical treatment was performed only in one case with large tense lesion. However, observation was the treatment of choice in all neonates while waiting for spontaneous resolve.

Empty scrotum presented in 12 (19%) neonate, in whom, the testis, if palpable, cannot move down to the scrotal sac. It was unilateral in 11 patients and bilateral in one case. Testicles were palpable, inguinal and undescended in 10 cases and nonpalpable in two cases. Scrotal anomalies in the form of bifid scrotum, in association with proximal hypospadias, were reported in three (4.8%) patients. Surgical correction was performed later during hypospadias repair (Fig. 2).

One neonate with testicular torsion is seen in our study. Sonographic features showed the affected testicle appeared enlarged, tender, mildly heterogeneous in echo texture, and showed absence of intratesticular vascular markings with peritesticular hypervascularity with color Doppler blood flow. The management was urgent surgery with orchiopexy of the contralateral testis (Fig. 3). One case with extratesticular hematoma owing to trauma was reported in our study and treated conservatively. Follow-up period ranged between 1 and 6 months.

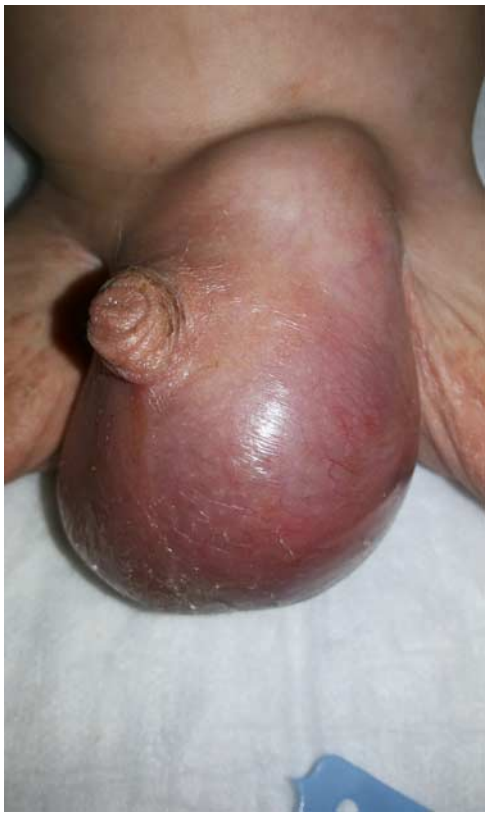
Discussion

Surgical causes of neonatal ISL are not uncommon and are a crucial subject for studying. This prospective observational study represents pattern and spectrum of surgical causes of ISL seen in the neonatal period in

Table 1 Varieties distribution of different surgical causes of neonatal inguinoscrotal lesion

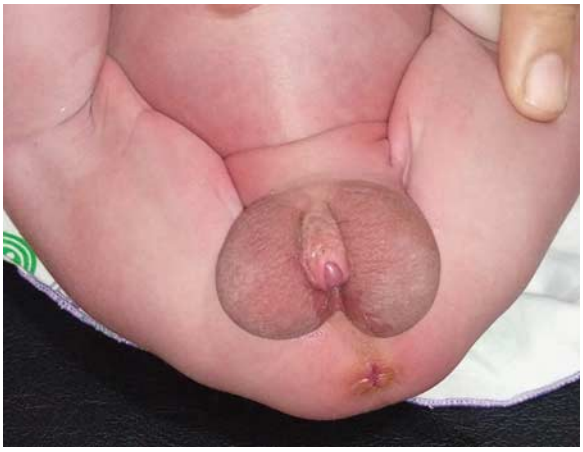
Surgical cause of neonatal inguinoscrotal lesion	$N = 63$ [n (%)]
Hernia	28 (44.4)
Hydrocele	18 (28.6)
Empty scrotum	12 (19)
Scrotal anomalies	3 (4.8)
Torsion	1 (1.6)
Trauma	1 (1.6)

Fig. 1



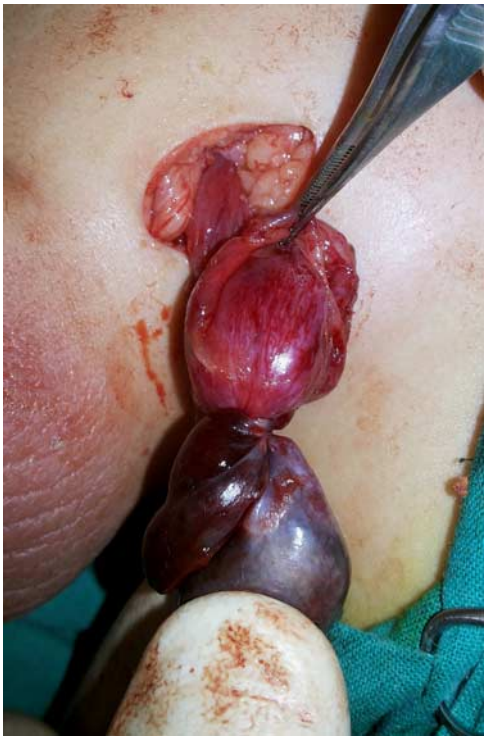
Strangulated congenital inguinal hernia.

Fig. 2



Bifid scrotum.

Fig. 3



Testicular torsion.

our region over the period from June 2015 to September 2016.

Many studies documented that male-to-female ratio was 9 : 1. These patients often present clinically with swelling and discoloration [4,5]; 13% of cases were found to have acute presentation, and bilateral lesion was found in 9.3% of cases [6].

Accurate diagnosis was mainly achieved by clinical evaluation; however, when accurate diagnosis cannot be achieved clinically, ultrasonography is an accurate, safe, inexpensive, and readily available imaging modality that can help greatly in the assessment of these lesions, diagnosis, and differential diagnosis [1,6,7,10–12].

Early detection of neonatal CIH is important to bypass complications. It is common in boys and is especially prevalent in premature neonates [13]. CIH can be unilateral or bilateral, and it has been reported to occur with a male-to-female ratio of 6 : 1 [14]. When an inguinal hernia is diagnosed, semiurgent surgery usually is performed to prevent the theoretical risk of incarceration [15,16]. Complicated inguinal hernias are reported in many studies [10,17,18]. When strangulation occurs, no vascular markings will be observed on the walls by ultrasound and urgent surgical interference will be required [6]. In our series, the most frequent lesions were inguinal hernia.

Hydrocele is a very common cause of inguinoscrotal swelling in the neonates and infants; when arising in the setting of a patent processus vaginalis, it is called a communicating hydrocele, otherwise, it is a noncommunicating hydrocele [13]. Spermatic cord hydrocele is less frequent, which can be of either encysted or funicular subtype depending on the absence or presence of a connection with the peritoneal cavity, respectively. In either case, fluid does not communicate with the tunica vaginalis [19]. From a surgical perspective, hydroceles often spontaneously resolve in the first year of life; however, if they persist beyond 12–18 months, they are typically repaired surgically [13,19].

Empty scrotum is frequently diagnosed during neonatal examination. When testis not in the scrotum at birth, its position should be reassessed at 3 months of age, as spontaneous testicular descent may occurs during the first 3 months of life [20]. In bifid scrotum, most often associated with proximal hypospadias, there is separation of scrotal folds without a median raphe. Surgical correction is usually performed during hypospadias repair [21].

In testicular torsion, twisting of the testis around its vascular pedicle, the spermatic cord, results in compromised lymphatic, venous, and arterial flow to the ipsilateral testis and epididymis, which can result in ischemia, infarction, and subsequent necrosis [4,6,22]. So testicular torsion is a surgical emergency, and early management is very important to relieve the obstructed blood supply and save testicular parenchyma [23]. Scrotal trauma may result in lesions ranging from extratesticular hematomas to testicular rupture. However, in cases with extratesticular hematomas, conservative treatment is recommended except in cases of impaired testicular blood flow [24].

Conclusion

ISL in neonates carries wide range of varieties, and it is crucial to differentiate between similar causes. Although CIH is the commonest, other causes should be kept in mind for differential diagnosis. Inguinoscrotal ultrasonography is a helpful tool to evaluate ISL in neonates.

Conflicts of interest

There are no conflicts of interest.

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