# Rectal duplication with sciatic hernia

**Marzena Nosek, Anna Golonka, Anita Kalińska-Lipert, Paweł Nachulewicz**

Department of Pediatric Surgery and Traumatology, University of Lublin, Lublin, Poland

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**Abstract**

*Rectal duplications represent 5% of all duplications in the alimentary tract, and they are very rarely diagnosed during the neonatal period. The authors present the method of investigation and the results of surgical treatment of a full-term neonate with a sciatic hernia containing a rectal duplication. The procedure started with three-port laparoscopy, but excision of the tubular duplication of the rectum was possible only by a transanal endorectal pull-through approach. The sciatic hernia was closed, and plastic sutures on the buttock finished the procedure. The coincidence of sciatic hernia with rectal duplication is extremely rare, and the method of treatment depends exclusively on the anatomical conditions.*

***Key words:*** *rectal duplication, transanal endorectal pull-through, sciatic hernia.*

## Introduction

Rectal duplications represent 5% of all duplications in the alimentary tract [1, 2] and they are very rarely recognized during the neonatal period. Sciatic hernia is considered to be the rarest hernia of the pelvic floor, with a limited number of published reports worldwide, mostly in adult patients. A comprehensive review of the literature by Losanoff *et al.* located only 78 articles describing 99 patients suffering from sciatic hernia. That group included only 12 pediatric patients [3]. The incidence of sciatic hernia coexisting with rectal duplication is an extremely rare anomaly.

The authors describe the technique and results of surgical treatment in a child with a congenital tumor located on the right buttock, which turned out to be a rectal duplication forming a right-hand sciatic hernia. A hernia with rectal duplication may be life threatening because of intestinal obstruction or intestinal perforation, so it presents a fair therapeutic and surgical challenge. Moreover, the anatomy of the sciatic area is very complex, and the outcome of the operation may affect the function of anal sphincters, sexual functions and reproduction in the future. Therefore preparation for the final operation requires specific radiological evaluation and use of the least invasive surgical methods.

## Case report

A 1-day-old female newborn was admitted to our institution due to a lump located on the right buttock. The baby was born from the fifth pregnancy of a 40-year-old mother by vaginal delivery.

Birth weight was 3700 g and Apgar scores were recorded as 10 at the 1$^{st}$ and 5$^{th}$ min. On physical examination, on the right buttock there was a soft, 3 cm in diameter palpable lump (Photo 1). Gentle pressing caused its reduction and a sound of spilling was heard. The skin over the mass was thin but without signs of inflammation. Stool passage was normal. Ultrasound transperineal examination showed a bowel loop containing gas and presenting normal peristalsis located in the pelvic floor rectum with a narrow canal of 2 mm in diameter.

**Address for correspondence**
Paweł Nachulewicz MD, PhD, Department of Pediatric Surgery and Traumatology, University of Lublin, 6 Antoniego Gębali St, 20-094 Lublin, Poland, phone: +48 72 585 20 00, e-mail: nachulewicz@msn.com

The diagnostic chain was extended with a barium enema, which showed rectal duplication approx. 9 mm above the cutaneous anus forming an ischiatic hernia (Photo 2). In order to find the exact placement of the orifice, colonoscopy was performed, which revealed the orifice located 1 cm above the dentate line. Magnetic resonance imaging (MRI) was performed to assess relationships among anatomic structures and potentially identify abnormalities causing hernia. Magnetic resonance imaging confirmed the diagnosis of sacrotuberous sciatic hernia (Photo 3). It also revealed atrophy of the obturator internal muscle, agenesia of the coccyx and an elongated sacrum placed horizontally. The hernia's gate was situated at the level of the ischioanal fossa on the right side.

The surgery was performed at the age of 3 months. The patient was operated on in a supine position. The pneumoperitoneum was made in open mode and three 3 mm ports were inserted. The laparoscopic inspection of the pelvic floor did not reveal hernia and duplication of the alimentary tract, so an open incision over the lump was made and 25 cm of extra-peritoneally situated duplicated intestinal loop was taken out. The common wall of the duplicated loop and the rectum was about 5 cm long on the lateral border of the rectum, so the endorectal pull-through procedure (TEPT) was performed (Photo 4). The common wall of the duplication and rectum was excised and removed through the anus. The proximal part of the rectum was sutured 1 cm above the dentate line with one layer of absorbable single sutures. The sciatic hernia orifice was closed with interrupted sutures without any tension. Subcutaneous and cutaneous plastic sutures on the buttock finished the procedure. A sample of the duplication wall was sent to the pathology lab and exhibited rectal mucosa.

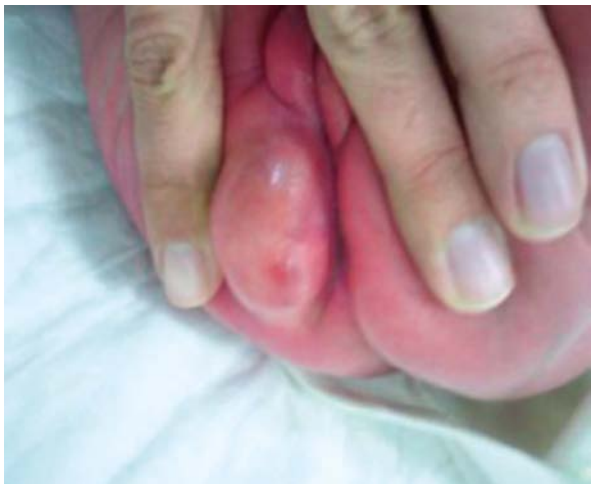

**Photo 1.** Tumor of the right buttock

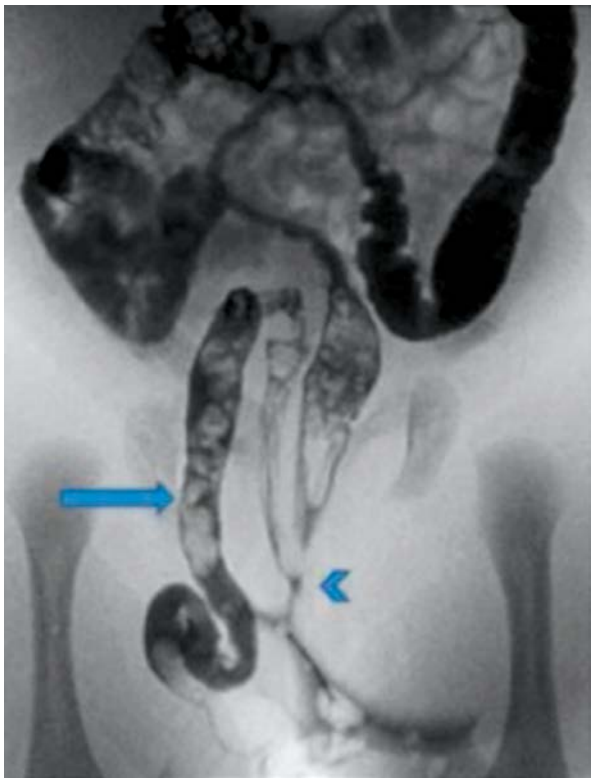

**Photo 2.** Barium enema

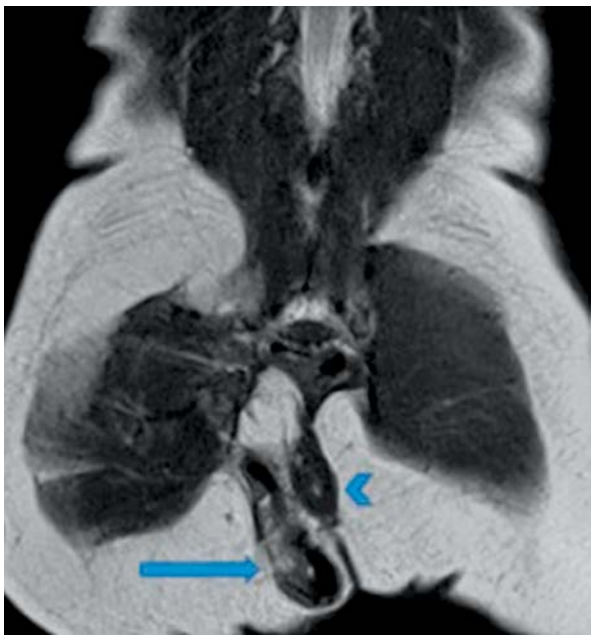

**Photo 3.** T2 weighted MRI

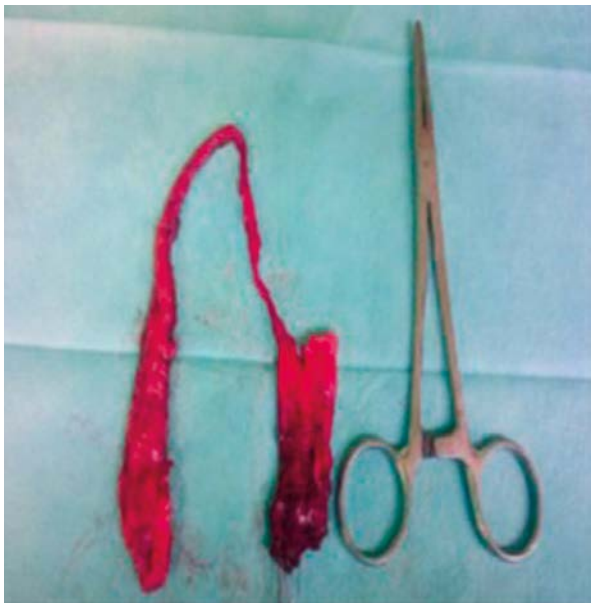

**Photo 4.** Resected duplication

The patient had an eventful recovery and was discharged from hospital 10 days after the operation, defecating normally. Two-year observation did not reveal any anal stricture or additional malformation. The child is still under surgical observation.

## Discussion

Rectal duplications are usually missed during the neonatal period due to a scarcity of symptoms. Most rectal duplications are cystic (94%) and are usually recognized as perianal abscesses, fistulas or tumors [4]. Knudtson *et al.* assess that up to 45% of rectal duplications are associated with a fistula to the anus or perianal region [5]. Tubular duplications of the rectum are generally located posteriorly and have been anterior to the rectum in only a few reported cases [1, 6]. In the present case, the common wall of the duplication was situated laterally. Symptoms are not characteristic. Most patients present with constipation, rectal bleeding, urinary tract infection, rectal prolapse, hemorrhoids and perirectal abscess. Diagnosis starts with ultrasound examination, plain radiography of the abdomen, contrast enema, computed tomography and MRI study. In this case treatment of rectal duplication was complicated by the presence of sciatic hernia. Symptoms of sciatic hernia can be acute or chronic. Intestinal obstruction with or without strangulation can be the first symptom of sciatic hernia and then diagnosis is established during exploratory laparotomy. Hernia can be suspected in cases of a painful tumor located in the buttock, but diagnosis and the decision of treatment may be very difficult, especially when symptoms are intermittent.

The treatment of alimentary tract duplications and sciatic hernia is surgical. The method depends on total excision due to the risk of intestinal obstruction [3]. Different approaches are available: a posterior sagittal approach, a trans-anal approach and laparotomy or laparoscopy. A posterior sagittal approach is recommended for a duplication located posteriorly, and an abdominal approach for a cyst located in the anterior position [1]. The most important problem is the common muscular layer between the rectum and the duplication. In small children excision of the rectum and duplication is a reasonable decision, but in older patients the procedure may be very difficult, with a real risk of incontinence. Duplication resection with stripping of mucosa on the common wall may be the only safe option. In our case the rectal duplication was the content of the hernial sac. Usually, the hernial sac contains the ovary, ureter, small intestine, colon or abnormal bowel. However, several different objects can occur inside [3]. The pathological structures most often causing sciatic hernia are: bony defect, atrophic gluteus maximus and piriform muscles or sacrospinous ligament. Hernias are classified into suprapiriform (the most common), infrapiriform, and the rarest – sacrotuberous.

The authors started their diagnostics with the least invasive studies (ultrasound examination and contrast enema). Ultrasound examination showed loops of bowel inside the tumor, colonoscopy presented the orifice and the lumen of the duplication, and MRI showed anatomical structures. In this case an MRI study showed atrophy of the obturator internus muscle, agenesis of the coccyx bone and a horizontal course of the elongated sacral bone. That allowed us to classify this case as a spinotuberous sciatic hernia. The surgical approach in sciatic hernia depends on symptoms and accomplished studies. In acute symptoms the best option is laparotomy or laparoscopy. In fully diagnosed cases the surgery starts with laparoscopy and/or a transgluteal approach. Usually surgical treatment requires 2 approaches: transperitoneal and an additional transgluteal approach. In this case the laparoscopy turned out to be unnecessary because the duplication was located extra-peritoneally.

## Conclusions

Sciatic hernia is a rare disorder, and in all cases of a tumor located in the buttock the diagnostic process should differentiate this defect from other pathologies.

## Conflict of interest

The authors declare no conflict of interest.

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