Sacrococcygeal Teratomas: An Oncological, Functional and Aesthetic Problem

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Keywords: Teratomas; Tumor; Sacrococcygeal; Pathology

Article Info:
Received: Jul 18, 2023
Accepted: Sep 21, 2023
Published: Nov 20, 2023

Abstract

These case presentations can be considered good practice in dealing with sacrococcygeal teratomas as early as possible. This can be attained using four flaps previously drawn in the skin covering the tumor, in viable and healthy tissues. After tumor excision, it is essential to carefully reconstruct the muscular perirectal complex. The drawing of the skin flaps should adhere to the orientation of the normal skin creases and maintain buttocks symmetry.

Introduction

We believe that the treatment of sacrococcygeal teratomas is one of the most challenging problems in children’s surgery. As we have to achieve the best possible result, both from the functional and the aesthetic point of view. The timing of surgery is important, as well as the attitude of the mother. This is well demonstrated in the second case.

Case presentation- 1

The surgical technique is presented through two examples of large sacrococcygeal teratomas (Figure 1). Under
general anesthesia, the patient is placed in a prone position, and four skin flaps are raised, of which the important one is the perianal flap (behind the anal orifice) extending as far as the skin allows, followed by the raising of the three other flaps (two lateral and the upper one).

Figure 1: Sacrococcygeal teratomas with meconium protruding from the anus

The tumor is separated from the gluteus maximus through a digital maneuver. It is important to remove the coccyx, preferably in continuity with the tumor [1-2], with control of an intraspinal lesion. One must be careful about eventual hemorrhages due to lesions of the mid-sacral artery (Figure 2).

Figure 2: Tumor isolated and coccyx being excised
The four flaps were previously drawn in the skin surface that covers the tumor, in a symmetrical way (tissues were viable and of good quality), and the final suture was placed at the inner buttocks area, as a figure of “H” or “I”.

With the localization of those incisions, one aims to respect the normalcy of the skin creases while keeping the symmetry of the buttocks (Figure 3).

![Figure 3: Final suture lines](image)

The three inner ones were sutured to the tendons of the resected muscles (two of them after being passed through the interosseous membrane) (Figure 4).

If there are doubts about the viability of the remaining skin the flaps may be extended slightly or reduced and adjusted during the final phase of the suturing.

Sometimes, it may be essential to use a combined approach (posteriorly sacral and laparoscopic).

**Case Presentation- 2**

The second patient had a giant mixed type of teratoma (Figure 4), that led to hydropsia, requiring several drainage puncture removals of 1.5 liters each time. This was done to sustain the pregnancy, and the final delivery was by cesarean.
Figure 4: Giant mixed teratoma that required the mother to perform multiple amniotic drainages

Discussion

Due to unknown reasons, those sacrococcygeal teratomas are much more frequent in females [3-4] with the highest frequency among teratomas. Hydropsys is generally caused by the shifting of the blood caused by large arteriovenous fistulas at the base of the tumor [5]. The attachment of the teratoma to the sacrococcygeal structures is anatomically identical whether the teratomas are large or small [6]. Surgery should be done as soon as possible, considering that malignancy seems to increase proportionately with age. (Figure 4). The use of tumor markers (alpha-fetoprotein, Beta sub-unit of GCH, and CA 125) is important in older children and distant controls. It is irrelevant in this case, considering the usual high values of alpha-fetoprotein in Newborns (50,000ng/ml and half-life 5.5 days) that reach 10 ng/ml by only 6 months of age. The physical handling of newborns with a large tumor should be minimal, as it can lead to sudden hemodynamic alterations, through the sudden transfer of blood from the tumor to the newborn. After removing the tumor, careful separation of the anus and attempts to avoid excessive competition in the elevator muscles are important for appropriate reconstruction to ensure future continence [7] (Figure 5) (in this patient was fortunately achieved as a reward to the heroicity of the mother).

Figure 5: Reconstruction of the muscular complex
Prior programming of the flaps for closing the skin wounds markedly reduces the dissection time. It also allows for the evaluation of the vitality of the flap, an essential condition for uneventful postoperative healing (Figure 6).

**Figure 6: Final appearance of the suture line**

The aim is to obtain a normal appearance of the buttocks when the child grows [8].

**Conclusion**

Surgery could be a good option to treat sacrococcygeal teratomas and should be performed soon after birth. With this technique, the muscular complex is completely reconstructed with the benefit of rectal continence, and the surgical scars are kept within the sacral area. Following the natural skin creases, ensuring buttocks symmetry ensures the best esthetics.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Conflict of Interest:** Nil

**Financial Disclosure:** None
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