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General Surgery

SACROCOCCYGEAL TERATOMA: A FLOURISHER IN THE BUD

Dr Anita Gangurde	Associate Professor, Department of surgery, Dr Vasantrao Pawar Medical college, Hospital And Research Center, Adgaon, Nashik, Maharashtra, India.
Dr Dinesh V Joshi	Associate Professor, Department of surgery, Dr Vasantrao Pawar Medical College, Hospital and research center, Adgaon, Nashik, Maharashtra, India.
Dr Shreya A. Raina	Junior Resident III, Department of surgery, Dr Vasantrao Pawar Medical college, Hospital and research center, Adgaon ,Nashik, Maharashtra ,India.
Dr Deepa D. Joshi*	Associate Professor, Department of Pediatrics, Dr Vasantrao pawar Medical college, Hospital and research center, Adgaon, Nashik, Maharashtra, India. *Corresponding Author

ABSTRACT **Introduction:** The sacrococcygeal region is the most common site of congenital teratomas, with sacrococcygeal teratomas (SCT) being the most frequent extragonadal tumor in newborns. **Materials And Methods:** A retrospective study was conducted, analyzing medical records of patients with SCT admitted over the past five years. Data on age, sex, tumor morphology and extent, histopathological findings, and final outcomes were extracted and reviewed. **Results:** Seven patients underwent tumor excision via the sacral approach, while one required an abdominal approach for complete excision. Postoperative complications were observed in two patients, both of whom developed wound infections. No patients experienced anorectal or bladder incontinence postoperatively. During the follow-up period, no tumor recurrence was observed. **Conclusion:** Although variations in presentation and management exist, comprehensive clinical evaluation and radiological imaging play a crucial role in achieving an accurate diagnosis and guiding preoperative planning.

KEYWORDS : Sacrococcygeal Teratoma, Altman Classification, Germ Cell Tumor, Bowel Incontinence, Surgical Site Infection

INTRODUCTION

Teratoma is defined as a neoplasm consisting of tissue derived from more than one primitive germ layer, with at least some components foreign to the anatomic site in which it occurs (1).

Teratomas are classified into three types: (i) mature teratomas, in which all components are well-differentiated; (ii) immature teratomas, which contain elements that show incomplete maturation and resemble various stages of embryonic differentiation; and (iii) malignant teratomas, which contain frankly neoplastic tissue (2).

The sacrococcygeal region is the most common site of congenital teratomas (3), with sacrococcygeal teratomas (SCTs) being the most frequent extragonadal tumors in newborns (4).

The differential diagnosis of sacrococcygeal masses includes teratomas, lipomas, meningoceles, and mixed neural lesions (5).

MATERIALS AND METHODS

A retrospective study was conducted, analyzing the medical records of patients with SCTs admitted over the past five years. Data regarding age, sex, tumor morphology and extent, histopathological findings, and final outcomes were extracted. Each neonate was followed for one year postoperatively.

On admission, all patients underwent routine hematological investigations. Ultrasonography and MRI were performed to define tumor characteristics. Following standard surgical preparation, anal packing was done, and the patient was positioned accordingly. The incision type was selected based on the tumor's clinical classification and extent. The tumor was mobilized along with the coccyx and excised in toto. Histopathological examination was performed for all cases. Patients were discharged following wound healing.

RESULTS

Eight female patients were included in the study. Five (62.5%) presented in the neonatal period, while three (37.5%) were between 1–5 years of age. All patients underwent surgery after confirmation of the diagnosis. Seven (87.5%) patients had Altman type II tumors, while one (12.5%) had an Altman type IV tumor.

Seven (87.5%) patients underwent excision via the sacral approach, while one (12.5%) required an abdominal approach. Postoperative complications occurred in two (25%) patients, both of whom developed wound infections. No patient developed anorectal or bladder incontinence postoperatively. Wound remodeling took 3–5 months. No tumor recurrence was observed during the follow-up period.

DISCUSSION

The exact origin of sacrococcygeal teratomas remains unclear (6). The most accepted theory suggests that SCTs arise from a localized concentration of totipotent cells forming an unorganized growth. This occurs as early as 18 days of gestation, with these cells residing in the sacrococcygeal region, where they are joined by parts of the migrating Hensen's node (2).

The incidence of SCTs is approximately 1 in 40,000 live births (13), with a marked female predominance (8), consistent with our findings, where all patients were female.

SCTs are classified based on their anatomical location and degree of intra-abdominal extension. Altman classified SCTs into four types:

Type I: Predominantly extrapelvic with a minimal presacral component.

Type II: Extrapelvic with a significant intrapelvic component.

Type III: Minimal external component with significant intrapelvic and intra-abdominal extension.

Type IV: Entirely intrapelvic or intra-abdominal with no external component (7).

In our study, the most common presentation was type II, differing from the literature, which reports type I as the most frequent (8).

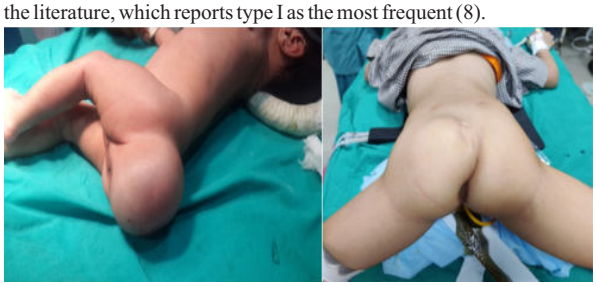

Figure 1 (a) and (b): Posterior View Of The Mass In Sacral Region Before Surgery.

Radiological investigations play a crucial role in diagnosing and characterizing SCTs. Imaging provides essential information for preoperative planning, including tumor morphology, intrapelvic extension, and involvement of adjacent structures (8,15).

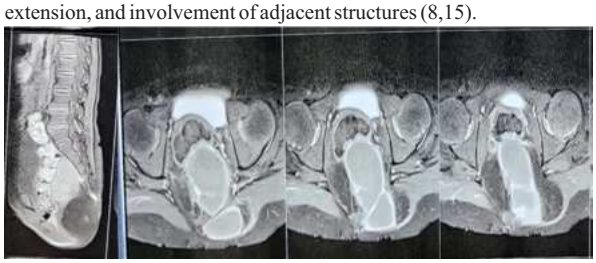

Figure 2: Magnetic Resonance Imaging of the Sacrococcygeal Teratoma

Surgical excision remains the standard treatment. Depending on tumor size, location, and relationship to surrounding structures, either a posterior sagittal approach or an abdominal approach was used. The abdominal approach was reserved for the patient with a palpable abdominal lump (Fig. 3b), whereas the posterior sagittal approach was used in other cases (Fig. 3a). The posterior sagittal approach offers the advantage of preserving the gluteal fold, ensuring good cosmetic results while maintaining excellent surgical access (14).

Figure 3 (a): Posterior Sagittal Approch; **3 (b):** Anterior Approach

Delayed treatment of SCTs may lead to tumor rupture and hemorrhage (8). The majority of type I and type II tumors can be excised using the posterior approach alone. Large type III tumors with both external and internal components may require a combined transabdominal and posterior approach, while purely intrapelvic tumors (type IV) may be approached laparoscopically (9).

Surgical outcomes and prognosis for SCTs are generally favorable. The recurrence rate following excision is estimated at 10–15% (10). However, in our study, no recurrence was observed. Recurrence risk is higher in cases of incomplete resection or when the tumor exhibits immature or malignant histology (11). Complete resection, including coccyx removal, reduces recurrence risk and prevents intraoperative tumor spillage (12)

Histopathological examination in our study revealed all tumors to be mature teratomas (Fig. 4), aligning with previous studies that report a predominance of mature histology in SCTs (16,17).

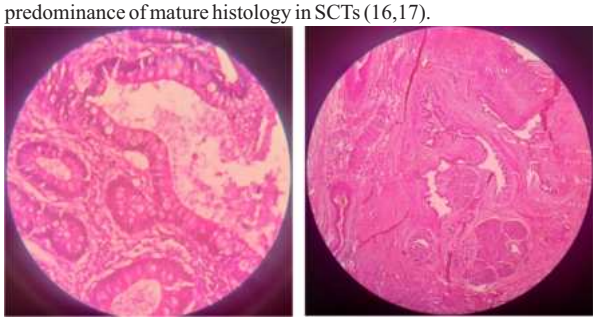

Figure 4: H and E stained sections showing ducts, glands, nerves

Postoperatively, wound infection is the most common complication, likely due to proximity to the anus and the risk of wound contamination. In our study, two patients developed postoperative wound infections, managed through daily wound care and strict local hygiene.

Bladder and anorectal incontinence have been reported in literature as potential postoperative complications, attributed to nerve compression or pelvic surgical sequelae. However, none of our patients experienced these complications postoperatively.

CONCLUSION

Sacrococcygeal teratoma is the most common germ cell tumor of the sacrococcygeal region. Although variations in presentation exist, appropriate clinical and radiological evaluations aid in diagnosis and preoperative planning. Complete surgical excision, including coccyx removal, is the treatment of choice. Close postoperative follow-up is essential for detecting potential complications and recurrence.

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