International Journal of Research and Review
[Indexed, Peer-Reviewed Journal]
Volume 13; Issue: 8; August 2026
Website: www.ijrrjournal.com
Case Report *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Mature Cystic Teratoma Presenting as a Giant Retrorectal Mass in an Adult Female: A Rare Case with Histopathological Confirmation

Charla Harish[1], Harindranath H R[2], Gulamnabi[3], Rajeev Nag[4], Srinivas Yadav[5]

Department of General Surgery, Sapthagiri Institute of Medical Sciences and Research Centre (SIMSRC), No. 15, Chikkasandra, Hesaraghatta Main Road, Bengaluru – 560 090, Karnataka, India

Corresponding Author: Charla Harish

DOI: https://doi.org/10.52403/ijrr.20260826

ABSTRACT

Background: Retrorectal tumors are uncommon lesions of the presacral space, and mature cystic teratomas constituting a subset of this group are exceptionally rare in adults. Their non-specific clinical presentation frequently leads to diagnostic delays and misclassification.

Case Presentation: We report a 51-year-old female who presented with a one-year history of progressively enlarging swelling in the gluteal cleft, accompanied by pain and difficulty walking. Imaging demonstrated a large (9.0 × 8.0 × 3.5 cm), multiloculated, solid-cystic retrorectal mass displacing the rectum anteriorly. Initial pre-operative assessment favoured a tail gut cyst, but histopathological examination following complete surgical excision confirmed a mature cystic teratoma containing derivatives of all three germ cell layers - ectoderm, mesoderm, and endoderm - without evidence of malignancy.

Conclusion: This case highlights the diagnostic challenges of retrorectal masses and underscores the indispensable role of histopathological analysis in achieving accurate diagnosis. Complete surgical excision remains the definitive treatment. Multidisciplinary collaboration - involving general surgery, neurosurgery, plastic surgery, and surgical oncology - is essential for optimal patient outcomes.

Keywords: *Mature cystic teratoma; Retrorectal tumor; Presacral mass; Tail gut cyst; Germ cell tumor; Surgical excision; Histopathology; Multiloculated cyst*

1. INTRODUCTION

Retrorectal tumors, also referred to as presacral tumors, are uncommon neoplasms arising in the retrorectal space - the anatomical compartment bounded anteriorly by the rectum, posteriorly by the sacrum and coccyx, superiorly by the peritoneal reflection, and inferiorly by the levator ani muscles.[1] Their incidence is estimated at approximately 1 in 40,000 hospital admissions, with a well-recognized female predominance.[3,7]

These tumors encompass a heterogeneous group of lesions including developmental cysts (tail gut cysts, epidermoid cysts, dermoid cysts), teratomas, chordomas, anterior sacral meningoceles, and soft tissue sarcomas.[6,8] Mature cystic teratomas constitute a rare but clinically important subset, containing well-differentiated tissues derived from all three embryological germ cell layers: ectoderm, mesoderm, and endoderm.

Their infrequency, combined with a propensity for an indolent clinical course and non-specific symptomatology, results in diagnostic delay and frequent misclassification on imaging as other cystic lesions - most commonly tail gut cysts.[2,4]

Accurate diagnosis has critical therapeutic implications, as teratomas carry a small but definite risk of malignant transformation if incompletely excised or left untreated.

We present a case of a 51-year-old female with a large retrorectal mature cystic teratoma, initially diagnosed radiologically as a tail gut cyst, and ultimately confirmed histopathologically following surgical excision. This report discusses the clinical, radiological, operative, and pathological features of this rare entity along with a focused review of the literature.

2. CASE PRESENTATION

2.1 Patient History and Clinical Findings

A 51-year-old woman (UHID: SH0003377246) presented to the Department of General Surgery at Sapthagiri Hospital, Bengaluru on 19 May 2026, with a chief complaint of swelling in the lower back of one year's duration. The swelling had gradually increased in size and was associated with intermittent pain of moderate severity and progressive difficulty in walking. She denied any fever, chills, weight loss, or neurological symptoms in the lower limbs.

Notably, the patient had undergone incision and drainage at an outside institution approximately 8 months prior, with a provisional diagnosis of tail gut cyst; the lesion subsequently recurred. She had also previously undergone evaluation and sclerotherapy in 2025 at outside hospital with incomplete follow-up. She was a newly diagnosed diabetic, not yet on pharmacological therapy.

Clinical examination revealed a 5 × 4 cm swelling in the right gluteal cleft - non-tender, non-fluctuant, without erythema, no local warmth, or discharge. The overlying skin was normal and pinchable. Systemic examination was unremarkable with stable vital signs (BP 120/70 mmHg, pulse 76/min, RR 18/min, temperature 96°F).

2.2 Investigations

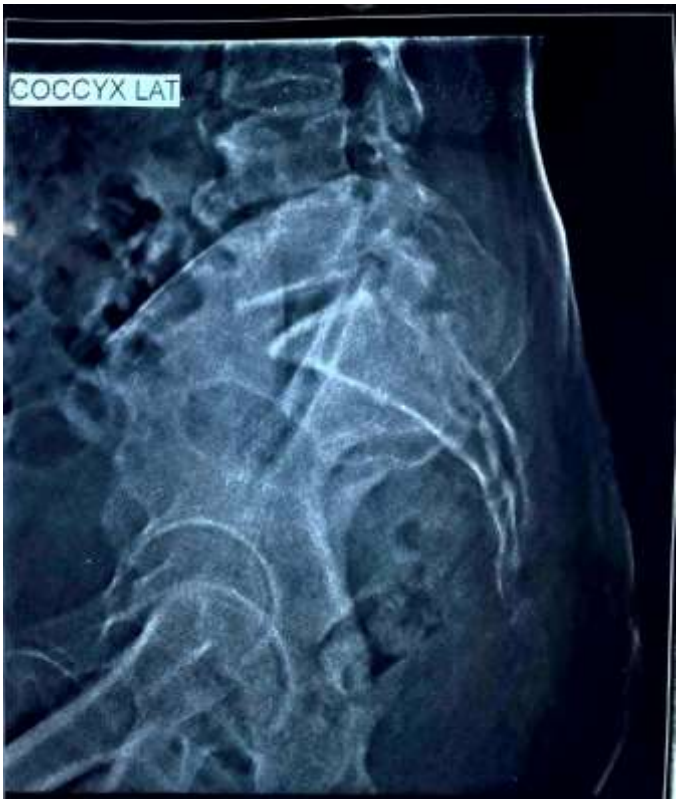

Figure 1. Lateral radiograph of the sacrum and coccyx (03 June 2026) demonstrating increased soft tissue density in the presacral region. The sacrococcygeal bones are intact with no evidence of bony erosion, consistent with an extra-osseous soft tissue mass.

Ultrasound: A large multiloculated cystic lesion (~7.2 × 4.8 × 5.0 cm; volume 80–100 cc) was identified in the right peri-anal and peri-rectal region with dense internal echoes, thick septations, and no Doppler vascularity — suggestive of a large presacral cystic lesion. MRI was recommended.

X-Ray Pelvis: Plain radiographs demonstrated normal hip and sacroiliac joints with no fracture or dislocation. Increased soft tissue density was noted in the presacral region (Figure 1).

Contrast-Enhanced MRI Lumbosacral Spine: A large, well-defined, multiloculated solid-cystic mass (6.9 × 7.5 × 7.3 cm) was demonstrated at the intergluteal cleft extending from the subcutaneous plane into the pelvis, displacing the rectum and anal canal anteriorly (Figures 2 and 3). The cystic component showed T2 hyperintensity with internal septations. The solid component (3.0 × 2.4 × 2.7 cm) showed focal T1/T2 hyperintense foci suggestive of haemorrhage. No diffusion restriction or post-contrast enhancement was identified. MRI impression: multilocular retrorectal cystic mass, most likely tail gut cyst.

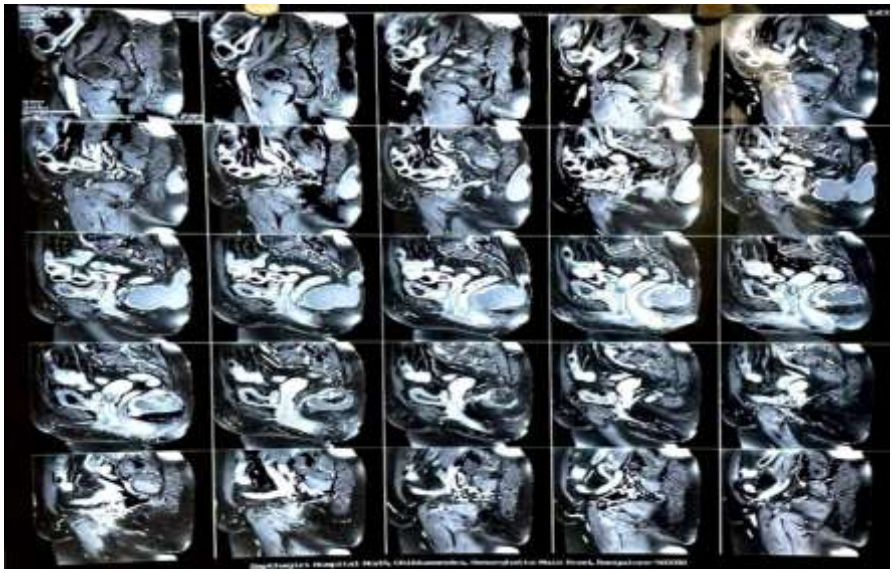

Figure 2. CE-MRI lumbosacral spine (22 May 2026): Axial and sagittal sequences demonstrating the large multiloculated solid-cystic mass in the pericoccygeal region. The predominantly cystic component shows T2 hyperintensity with multiple internal septations. The solid component at the left lateral aspect demonstrates focal T1/T2 hyperintense foci consistent with haemorrhage. Note anterior displacement of the rectum and anal canal.

Figure 3A. Axial pelvic MRI cuts confirming the multiloculated nature of the mass with mixed signal characteristics.

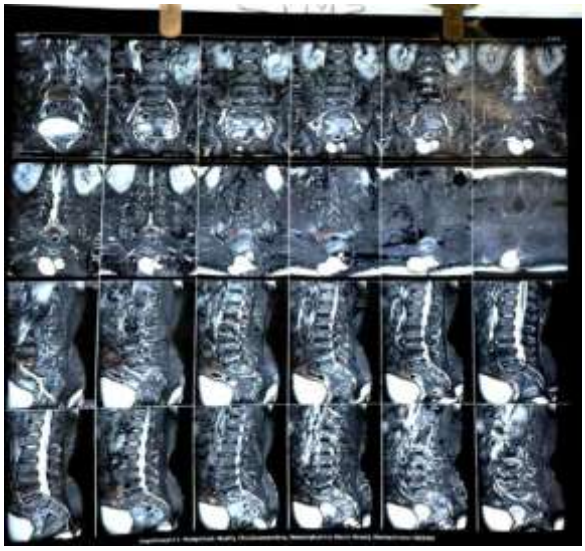

Figure 3B. Sagittal whole-spine screening demonstrating the inferior extent of the retrorectal mass and multilevel lumbar disc degenerative changes. No post-contrast enhancement was identified, arguing against malignant transformation.

Prior Cytology (June 2025): Retrorectal cyst aspirate (15 mL, pale yellow, jelly-like) showed a paucicellular smear with cyst macrophages and occasional inflammatory cells; no atypical or malignant cells. Impression: Negative for Malignancy.

2.3 Preoperative Multidisciplinary Assessment

Multidisciplinary consultations were obtained from the Departments of Neurosurgery, Plastic Surgery, and Surgical Oncology prior to definitive surgical planning. Fitness for surgery was confirmed by Internal Medicine and Cardiology. Consensus recommendation was complete surgical excision under general anaesthesia.

2.4 Operative Findings and Post-Operative Course

The patient underwent excision of the retrorectal cyst under general anaesthesia on 28 May 2026 via a posterior approach. Intra-operatively, the cystic mass was found adherent to the surrounding presacral soft tissues but was dissected free without entry into the rectum. The specimen was delivered intact where possible; portions of the ruptured cystic wall were excised completely. Haemostasis was secured and a closed suction drain was placed.

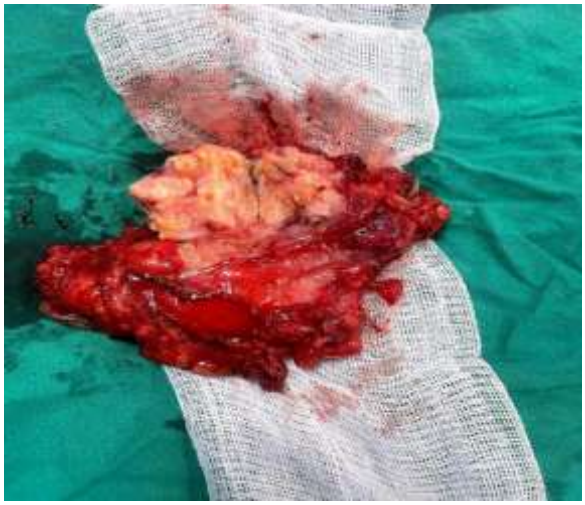

Figure 4A. External surface of excised specimen — congested, lobulated, irregular surface with haemorrhagic areas, consistent with a ruptured cystic structure. The specimen measured 9.0 × 8.0 × 3.5 cm.

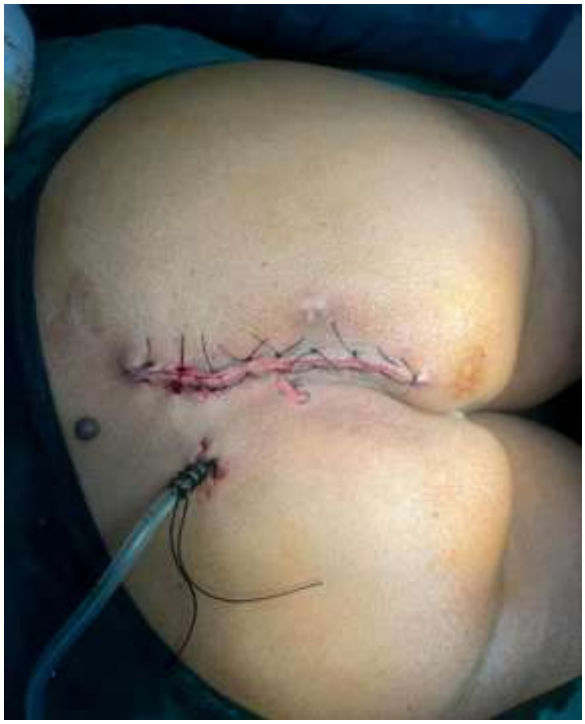

Figure 4B. Cut section of the specimen revealing yellowish-white sebaceous/fatty contents and multiloculated architecture - characteristic macroscopic features of a mature cystic teratoma.

Post-operatively, the patient was managed with intravenous fluids, antibiotics (Ceftriaxone 1g BD × 3 days), analgesics (Dynapar AQ 75 mg BD), and anti-emetics. The wound was inspected on post-operative day 4 and found to be healthy. The drain was removed on post-operative day 4.

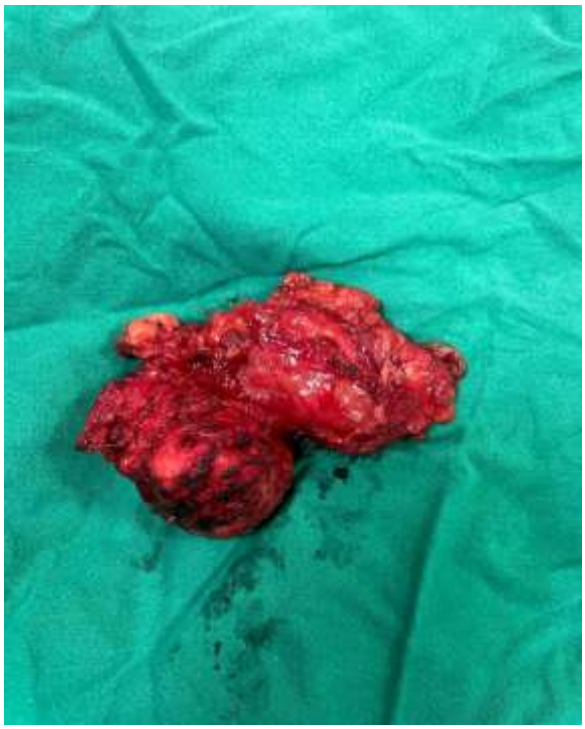

Figure 5. Post-operative wound appearance following excision of the retrorectal mature teratoma (28 May 2026). The intergluteal incision is approximated with interrupted non-absorbable sutures. A closed suction drain is visible exiting through a separate stab incision inferiorly. The wound margins are viable with no signs of infection or dehiscence.

The patient was discharged on post op day-5 in hemodynamically stable condition with prescribed oral antibiotics (Cefuroxime 500 mg x 5 days), pantoprazole, analgesic (Zerodol-SP x 5 days), Vitamin C 500 mg, and Becosules, along with high-protein dietary supplementation. Alternate-day wound dressing and suture removal after 10 days were advised. Follow-up was scheduled in the Surgical OPD.

2.5 Histopathological Examination

Gross specimen: A partially skin-covered ruptured cystic structure measuring 9.0 × 8.0 × 3.5 cm was received. The skin flap measured 6.0 × 1.5 cm. The external surface was congested and irregular (Figure 4A). Cut section revealed a multiloculated structure containing multiple cysts of varying size filled with thick mucinous/gelatinous and yellowish-white sebaceous contents (Figure 4B). A firm-to-hard, grey-white lesion measuring 3.5 × 2.5 × 1.0 cm with a gritty cut surface was also noted.

Microscopic examination (Biopsy No. B-5541/26; reported 5 June 2026): Multiple sections demonstrated derivatives of all three embryological germ cell layers:

Ectoderm: Stratified squamous epithelium

Endoderm: Variably-sized cysts lined by columnar epithelium and pseudostratified ciliated columnar epithelium with squamous metaplasia

Mesoderm: Disorganized bundles of smooth muscle, fibroadipose tissue, cartilaginous tissue, and bony trabeculae with bone marrow elements

Additional findings included mucinous areas, xanthogranulomatous reaction with numerous multinucleated giant cells, and moderate chronic inflammatory infiltrate. No dysplasia, malignancy, or immature elements were identified.

Final Histopathological Diagnosis: *Mature teratoma — Retrorectal mass.*

3. DISCUSSION

Retrorectal tumors are uncommon, with an estimated incidence of approximately 1 in 40,000 hospital admissions.[3,7] Teratomas account for a minority of retrorectal tumors in adults; the vast majority of presacral teratomas occur in neonates and infants, and reports in adults remain limited to isolated case descriptions.[10] In adult women, the differential diagnosis of a retrorectal cystic mass includes tail gut cysts, epidermoid and dermoid cysts, anterior sacral meningocele, lymphangioma, and rarely, mature teratoma.[2,5]

Clinically, these tumors often present insidiously with non-specific symptoms including low back pain, pelvic pressure, constipation, or a visible gluteal mass.[4,5] The present patient's one-year symptomatic course, prior failed interventional procedures (sclerotherapy and incision and drainage), and subsequent recurrence underscore the critical importance of accurate initial diagnosis and complete excision.

On MRI (Figures 2 and 3), mature teratomas of the presacral space characteristically demonstrate mixed signal intensity due to variable tissue composition. The T1 hyperintense foci in the solid component likely corresponded to fatty or haemorrhagic teratomatous elements. The absence of diffusion restriction and post-contrast enhancement was reassuring against malignant transformation. Despite these characteristic findings, pre-operative imaging favoured a tail gut cyst, illustrating that imaging alone cannot reliably distinguish between retrorectal cystic subtypes.

The gross specimen (Figure 4) displayed the hallmark macroscopic features of a mature teratoma — a multiloculated cystic structure with sebaceous/fatty contents and a firm solid component, in contrast to the serous or mucinous content typical of tail gut cysts. Histopathological analysis confirmed derivatives of all three germ cell layers, cementing the diagnosis.

The post-operative wound (Figure 5) healed satisfactorily following the posterior approach excision, with the intergluteal incision affording excellent exposure of the retrorectal space. The posterior approach, as used in this case, is the preferred route for

low retrorectal tumors below the S3 level that do not involve the sacrum, offering adequate exposure without the morbidity of an abdominal approach.[9]

Multidisciplinary preoperative planning involving neurosurgery (for potential sacral nerve preservation), plastic surgery, and surgical oncology was essential for safe execution. Although mature teratomas are benign, incomplete excision risks recurrence and, rarely, malignant transformation; long-term imaging surveillance is therefore recommended following excision.

4. CONCLUSIONS

This case illustrates the diagnostic complexity of retrorectal tumors in adult females and the indispensable role of histopathological examination in achieving a definitive diagnosis. Despite the characteristic macroscopic and microscopic features of mature cystic teratoma — multiloculated architecture, sebaceous contents, and tri-germinal layer differentiation — pre-operative imaging could not reliably distinguish the lesion from a tail gut cyst. Complete surgical excision via a posterior approach, guided by multidisciplinary consensus, resulted in an uneventful recovery. Clinicians must maintain a high index of suspicion for teratomatous lesions in patients with recurrent retrorectal cysts to avoid inappropriate management.

5. Patient Consent Statement

Written informed consent was obtained from the patient for publication of this case report and all accompanying clinical, radiological, operative, and pathological images. Patient identifying information has been anonymised in accordance with institutional guidelines and the Declaration of Helsinki.

Declaration by Authors

Authorship Contributions

All authors contributed to the clinical management of the Patient, manuscript preparation, and revision. All authors have read and approved the final manuscript.

Acknowledgement: The authors gratefully acknowledge the Department of Pathology, Department of Radiodiagnosis, the surgical team, and the nursing staff of the Surgery Ward at Sapthagiri Hospital for their invaluable contributions to patient care and diagnosis.

Source of Funding: None

Conflict of Interest: The authors declare no conflicts of interest. No financial support or funding was received for this case report.

Summary of Key Clinical Findings

Parameter	Details
Patient	51-year-old female | UHID: SH0003377246
Presenting Complaint	Swelling lower back/gluteal region × 1 year; pain; difficulty walking
Prior Interventions	Sclerotherapy; Incision & Drainage (external, 8 months prior) — both with recurrence
USG Findings	Multiloculated cystic lesion ~7.2 × 4.8 × 5.0 cm, right peri-anal/peri-rectal region; no Doppler flow
MRI Findings (Figs. 2 & 3)	Large solid-cystic mass 6.9 × 7.5 × 7.3 cm, pericoccygeal region, displacing rectum anteriorly; no contrast enhancement; T1 hyperintense foci in solid component
Cytology (2025)	Retrorectal cyst aspirate — Negative for Malignancy
Radiograph (Fig. 1)	Increased presacral soft tissue density; bony structures normal
Pre-op Diagnosis	Tail gut cyst (multilocular retrorectal cystic mass)

Parameter	Details
Surgery (Fig. 5)	Excision of retrorectal cyst under GA, 28 May 2026; posterior approach; drain placed
Gross Specimen (Fig. 4)	Ruptured cystic structure 9.0 × 8.0 × 3.5 cm; multiloculated; mucinous/sebaceous contents; firm grey-white solid areas
Histopathology	Mature cystic teratoma — all three germ cell layers; no malignancy; no immature elements (B-5541/26)
Post-op Course	Uneventful; drain removed POD 4; wound healthy; discharged 03 June 2026
Follow-up Plan	Surgery OPD (Tuesdays); wound dressing alternate days; suture removal at 10 days

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How to cite this article: Charla Harish, Harindranath H R, Gulamnabi, Rajeev Nag, Srinivas Yadav. Mature cystic teratoma presenting as a giant retrorectal mass in an adult female: a rare case with histopathological confirmation. *International Journal of Research and Review*. 2026; 13(8): 264-271. DOI: *https://doi.org/10.52403/ijrr.20260826*

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