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Case Series

Surgical management of adnexal masses in adolescent females at a tertiary centre in India: a case series

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ABSTRACT

This case series details 15 adolescent females (aged 13–19 years) who underwent surgery for adnexal masses from January 2022 to January 2025. The most common presenting complaint was abdominal pain (80%). Imaging with ultrasound and MRI showed large complex cystic masses (>10 cm) in 66.7% of patients. Laparotomy was performed in 12 patients (80%) due to large size and limited resources, while laparoscopy was feasible in 3 cases (20%). Histopathology revealed benign lesions in all cases: mature cystic teratoma (66.7%), serous cystadenoma (20%), and functional cyst (13.3%). Mild elevations in CA-125 and LDH were noted in some patients, but no malignancy was identified. Ovarian preservation was achieved in 60% of cases. All patients recovered uneventfully, with no complications or recurrences at six-month follow-up. These findings support the benign nature of adolescent adnexal masses and emphasize individualized surgical management with fertility preservation.

Keywords: Adnexal masses, Adolescents, Mature cystic teratoma, Laparotomy, Case series, Fertility preservation

INTRODUCTION

Adnexal masses in adolescents are uncommon but clinically significant due to the potential impact on future fertility and psychological health. Most adnexal masses in this group are benign, with mature cystic teratomas being common.¹ Timely diagnosis with imaging and surgical planning is essential to prevent overtreatment and preserve reproductive potential.² This case series reports 15 adolescents with adnexal masses surgically treated at a tertiary care centre, highlighting presentation, imaging, surgical findings, histopathology, and outcomes.

CASE SERIES

Case 1

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a

mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 2

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 3

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 4

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 5

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 6

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 7

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

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A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 9

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 10

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Case 11

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 12

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed.

Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by

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Case 13

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 14

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Case 15

A patient aged between 13–19 years presenting with abdominal pain and/or distension. Imaging revealed a mass, and tumor markers (CA-125, AFP, β -hCG, LDH) were assessed. Laparotomy was the primary approach in 80% (12/15) due to size (>10 cm), with laparoscopy in 20% (3/15). Histopathology showed benign lesions. Mature cystic teratoma was the most common (66.7%), followed by serous cystadenoma (20%) and functional cyst (13.3%). Postoperative recovery was uneventful in all.

Summary of cases

Mean age

The mean age was 16.4 years (range: 13–19 years).

Presenting symptoms

Symptoms were abdominal pain (80%), distension (26.7%), menstrual irregularities (13.3%)

Imaging

The imaging was of complex cystic mass >10 cm in 66.7%.

Surgical approach

Laparotomy in 12 patients (80%), laparoscopy in 3 (20%) were the surgical approach.

Histopathology

Mature cystic teratoma (10), serous cystadenoma (3), functional cyst (2)

Ovarian preservation

Achieved in 60% no intraoperative complications, recurrences, or malignancy detected at six months follow-up.

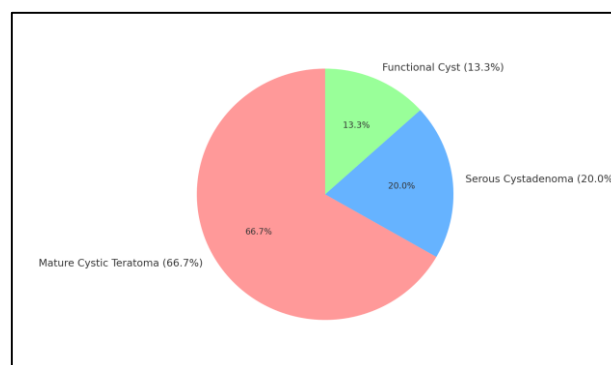


Figure 1: Histopathological diagnosis distribution.

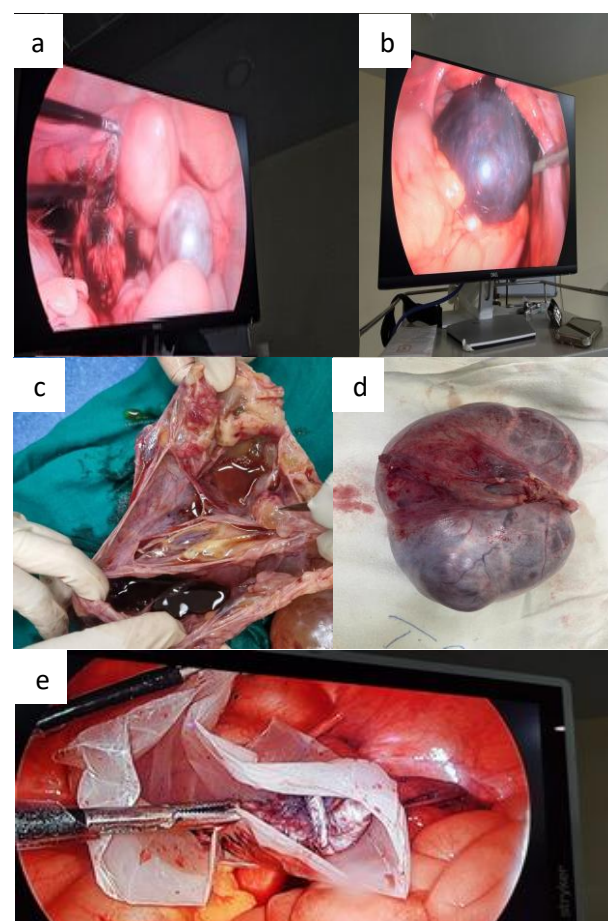


Figure 2: (a,b,c,d,e) Few intraoperative and gross and cut sections of masses encountered during study period.

DISCUSSION

This case series reinforces that most adolescent adnexal masses are benign, with mature cystic teratoma being the most common histological finding. Similar conclusions were drawn by Cass et al, who reported a predominance of benign lesions in pediatric and adolescent populations.³ In our setting, larger tumor size often necessitated laparotomy, especially in resource-limited environments where minimally invasive facilities are scarce. Imaging and morphological assessment played a key role in preoperative evaluation, consistent with Valentin's findings, which emphasized sonographic morphology in differentiating benign from malignant masses.¹

Adnexal torsion was managed promptly in our cohort, highlighting the importance of early diagnosis. Vlahos et al. noted that torsion is a common surgical emergency in young women and requires prompt intervention to preserve ovarian function.² Mild elevations in tumor markers such as CA-125 and LDH were observed but did not correlate with malignancy, supporting previous observations by Cass et al. and Dällenbach et al, who reported limited specificity of these markers in adolescents.^{3,4}

Fertility preservation was achieved in 60% of cases, consistent with Hermans et al, who emphasized individualized, fertility-conscious management in reproductive-aged women.⁵ Where feasible, laparoscopy was performed, offering faster recovery and reduced morbidity, in line with the meta-analysis by Li et al.⁶

Multidisciplinary care remains essential, involving gynecology, pediatric surgery, pathology, and psychological support. Reproductive counselling should also be prioritized early, particularly in adolescents undergoing oophorectomy or facing long-term fertility concerns.

CONCLUSION

Adnexal masses in adolescents are mostly benign, with mature cystic teratomas being the most common.

Laparotomy remains the primary approach for large masses in resource-limited settings, though laparoscopy is preferred when feasible. Fertility-sparing surgery is achievable in most cases, highlighting the importance of individualized care and counselling.

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Ethical approval: Not required

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