**RESEARCH ARTICLE**

# "Struma Ovarii Mimicking Ovarian Malignancy: A Single-Case Clinicoradiologic-Pathologic Analysis"

**DR. G.RADHIKA[1], DR. R.GOVINDARAJAN[2], DR. R.REVATHI SHREE[3], DR.P.PRIYANKA[4]**

*[1]Final Year Postgraduate, Department of Pathology, Shri Sathya Sai Medical College & Research Institute, (Sri Balaji Vidyapeeth University (DU), Chennai campus), Ammapettai, Nellikuppam Post, Chengalpattu District, Tamilnadu, 603108, India*

*[2]Professor & Head, Department of Pathology, Shri Sathya Sai Medical College & Research Institute, (Sri Balaji Vidyapeeth University (DU), Chennai campus), Ammapettai, Nellikuppam Post, Chengalpattu District Tamilnadu, 603108, India*

*[3]Professor, Department of Pathology, Shri Sathya Sai Medical College & Research Institute, (Sri Balaji Vidyapeeth University (DU), Chennai campus), Ammapettai, Nellikuppam Post, Chengalpattu District Tamilnadu, 603108, India*

*[4]Professor, Department of Pathology, Shri Sathya Sai Medical College & Research Institute, (Sri Balaji Vidyapeeth University (DU), Chennai campus), Ammapettai, Nellikuppam Post, Chengalpattu District Tamilnadu, 603108, India*

***Received: 24th Dec, 2025; Revised: 11th Feb 2026; Accepted: 20th March, 2026; Available Online: 02 th May 2026***

**ABSTRACT**

## Abstract

**Background:** Struma ovarii is an uncommon monodermal ovarian teratoma composed predominantly of thyroid tissue. Because it may present with a complex adnexal mass, ascites, omental thickening, and elevated CA-125, the lesion can be mistaken preoperatively for epithelial ovarian malignancy.

**Objectives:** To describe the clinicoradiologic, biochemical, operative, and histopathological profile of benign struma ovarii presenting with features suggestive of ovarian cancer, and to reframe the case in a structured original-article format.

**Methods:** A descriptive single-patient clinicopathological analysis was undertaken in a tertiary-care setting. Clinical history, imaging findings, ascitic fluid analysis, tumor marker profile, thyroid function tests, operative details, and histopathology were reviewed narratively and presented in tabular and graphical form.

**Results:** A 46-year-old multiparous woman with type 2 diabetes mellitus and treated pulmonary tuberculosis presented with abdominal distension, constipation, reduced urine output, and poor appetite. Imaging revealed a large left adnexal complex lesion measuring approximately 9.2 × 8.2 × 11.5 cm with solid and cystic components, calcifications, fat density areas, severe ascites, and omental thickening. CA-125 was >600 U/mL, while AFP, beta-hCG, and CEA were not elevated. Thyroid function remained euthyroid. Ascitic fluid cytology was negative for malignancy. Exploratory laparotomy with excision of the adnexal mass was performed. Histopathology demonstrated a teratomatous ovarian tumor composed predominantly of mature thyroid tissue arranged in microfollicular and macrofollicular patterns with colloid, without malignant features, confirming struma ovarii.

**Conclusion:** Benign struma ovarii may closely simulate ovarian malignancy when it presents with a large complex mass, ascites, and markedly elevated CA-125. Histopathological examination remains decisive, and recognition of this entity may help avoid diagnostic overcalling and unnecessarily aggressive interpretation.

**Keywords:** struma ovarii, ovarian teratoma, CA-125, ascites, ovarian mass, histopathology

**How to cite this article:** Dr. G.Radhika, Dr. R.Govindarajan, Dr. R.Revathi Shree, Dr.P.Priyanka, "Struma Ovarii Mimicking Ovarian Malignancy: A Single-Case Clinicoradiologic-Pathologic Analysis". .Int J Drug Deliv Technol. 2026;16(41s): 632-637. DOI: 10.25258/ijddt.16.41s.68

**Source of Funding:** Nil.

**Conflict of interest:** We declare that there is no conflict of interest

## INTRODUCTION

Struma ovarii is a specialized ovarian teratoma in which thyroid tissue constitutes more than half of the tumor volume [1,2]. It is distinctly uncommon, representing only a small proportion of ovarian neoplasms and a minority of mature teratomas [1-3]. Most lesions are benign, yet their clinical behavior can be misleading because presentation depends more on size, associated effusions, and accompanying biochemical abnormalities than on histologic aggressiveness alone [2,4].

That mismatch between biologic behavior and clinical impression is what makes the tumor important. Women often present with abdominal pain, a palpable pelvic mass, distension, or nonspecific gastrointestinal pressure symptoms. In a subset, ascites, pleural effusion, and raised CA-125 create a pseudo-Meigs pattern that strongly suggests ovarian carcinoma before tissue diagnosis is available [5-8]. Radiology does not always settle the issue. Solid and cystic architecture, calcifications, fat foci, septations, and enhancement patterns may overlap with mature teratoma, borderline tumor, or frankly malignant ovarian neoplasm [3,4].

Histopathology therefore remains central to diagnosis. Mature thyroid follicles filled with colloid define the lesion, while careful evaluation is needed to exclude malignant transformation, most commonly papillary or follicular thyroid-type carcinoma arising within the ovary [9,10]. Here, we describe a middle-aged woman with a large left adnexal mass, severe ascites, omental thickening, and markedly elevated CA-125 in whom the final diagnosis was benign struma ovarii. The case is presented in an original-article framework to emphasize structured clinicoradiologic-pathologic correlation rather than narrative case reporting alone.

## MATERIALS AND METHODS

**Study design and setting:** This was a descriptive single-patient clinicopathological analysis of a surgically managed ovarian mass evaluated in a tertiary-care hospital.

**Participant profile:** One 46-year-old multiparous woman with a left adnexal mass, ascites, and raised CA-125 was included.

**Clinical and laboratory assessment:** Symptoms, menstrual history, comorbidities, ascitic fluid analysis, tumor markers, and thyroid function tests were reviewed from the clinical record.

**Imaging assessment:** Ultrasonography and computed tomography findings were examined for lesion size, internal composition, associated calcific and fat components, laterality, and accompanying peritoneal findings.

**Reference standard:** The final diagnosis was based on postoperative histopathological examination of the excised adnexal mass.

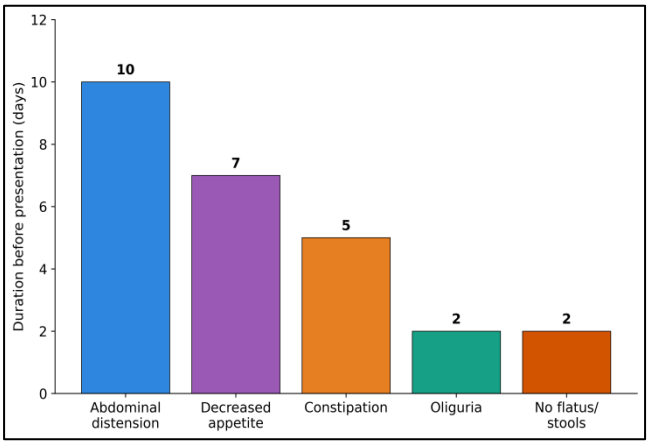
**Statistical approach:** Because this was a single-case descriptive analysis, no inferential statistics were applied. Quantitative values were summarized directly and displayed as tables and descriptive figures.

## RESULTS

The baseline clinical profile is summarized in Table 1. The patient was 46 years old, para 5 with three living children, and had relevant comorbidities in the form of long-standing type 2 diabetes mellitus and previously treated pulmonary tuberculosis. Her presenting complaints were predominantly pressure-related rather than endocrine, with abdominal distension for 10 days, decreased appetite for one week, constipation for five days, and reduction in urine output for two days.

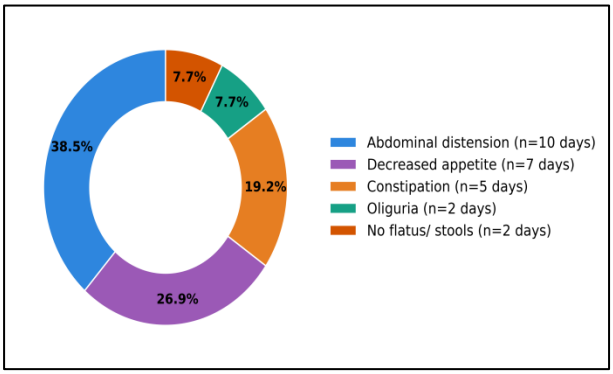
**Table 1. Baseline demographic, symptom, and clinical profile**

| Variable | Finding |
|---|---|
| Age | 46 years |
| Parity / living children | Para 5, Live 3 |
| Primary symptoms | Abdominal distension, constipation, decreased urine output, poor appetite |
| Symptom duration | Distension 10 days; appetite loss 7 days; constipation 5 days; decreased urine output 2 days |
| History of bowel arrest | No flatus or stools for 2 days |
| Menstrual profile | Regular cycles; 3–5 days every 28–35 days |
| Relevant comorbidity 1 | Type 2 diabetes mellitus for 10 years on intermittent insulin/OHA treatment |
| Relevant comorbidity 2 | Pulmonary tuberculosis 3 years earlier; completed 6 months of ATT with sputum AFB negative thereafter |
| Thyrotoxic symptoms | Not reported |
| Weight loss / fever | Not reported |




**Bar chart shows symptom duration in days; values are displayed above each bar.**

**Figure 2. Duration of major presenting symptoms before admission.**



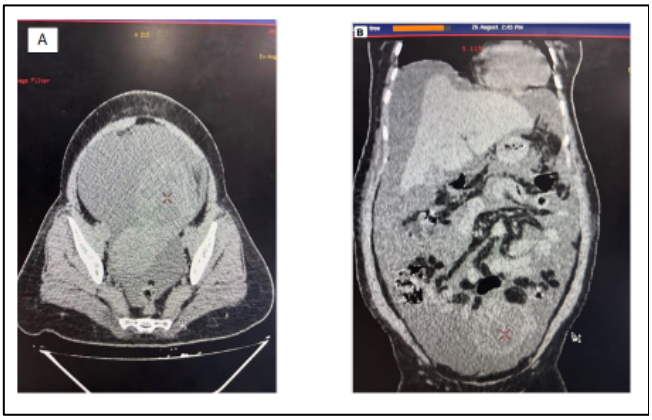

**Donut chart depicts the proportional distribution of symptom-duration days reported before admission.**

**Figure 5. Relative symptom burden across the preoperative period**

Radiologic and fluid-analysis findings are presented in Table 2. Ultrasonography and CT demonstrated a large complex left adnexal lesion with solid and cystic components, internal calcifications, and fat density areas. The lesion measured approximately 9.2 × 8.2 × 11.5 cm and was associated with severe ascites and omental thickening. The left ovary was not visualized separately. Representative CT images are shown in Figure 1. The duration of major presenting symptoms before admission is displayed in Figure 2, and the recorded lesion dimensions are displayed in Figure 3.

**Table 2. Imaging and ascitic fluid findings**

| Parameter | Finding |
|---|---|
| Location | Left adnexal / abdominopelvic mass |
| CT and ultrasound appearance | Complex heterodense lesion with solid and cystic components |
| Measured lesion size | Approximately 9.2 × 8.2 × 11.5 cm |
| Additional radiologic components | Internal calcifications and fat density areas |
| Anatomic relation | Abutting the left fallopian tube and uterus |
| Ovary visualization | Left ovary not separately visualized |
| Associated peritoneal finding | Severe ascites |
| Other associated finding | Omental thickening |
| Radiologic differential diagnosis | Ruptured mature versus immature ovarian teratoma |
| Ascitic fluid protein | 4.3 g/dL |
| Ascitic fluid cytology | Negative for malignancy |
| Microbiological work-up | No bacterial or AFB growth |




*Panel images show a large complex left adnexal lesion with mixed solid-cystic morphology and associated abdominopelvic fluid.*

**Figure 1. Cross-sectional imaging of the adnexal mass.**

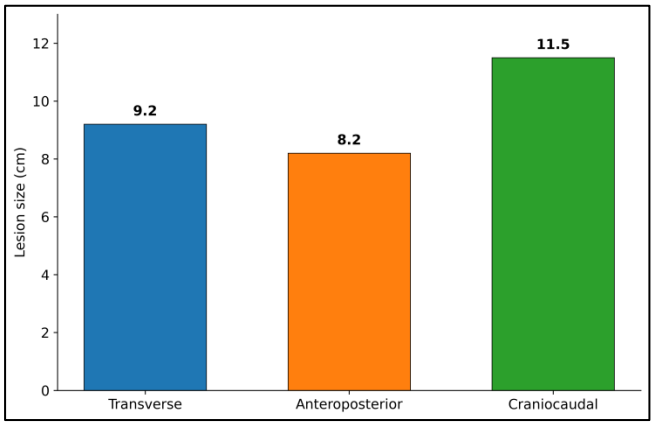



**Figure 3. Recorded lesion dimensions on preoperative imaging.**

*Bar chart displays transverse, anteroposterior, and craniocaudal measurements in centimeters.*

The laboratory profile is detailed in Table 3. CA-125 was markedly elevated at more than 600 U/mL, whereas AFP, beta-hCG, and CEA were not elevated. Thyroid hormone levels remained within a euthyroid range, with Free T3 3.04 pg/mL, Free T4 1.07 ng/dL, and TSH 0.37 µIU/mL. Figure 4 summarizes the tumor-marker status pattern that contributed to a preoperative malignancy-oriented interpretation. The proportional distribution of symptom-duration burden across the preoperative period is illustrated in Figure 5.

**Table 3. Tumor marker and thyroid function profile**

| Test | Result | Interpretation |
|---|---|---|
| CA-125 | >600 U/mL | Markedly elevated |
| AFP | Normal | Not suggestive of yolk sac tumor |
| beta-hCG | Normal | Not suggestive of trophoblastic/gestational tumor |
| CEA | Normal | No supportive biochemical evidence of mucinous gastrointestinal-type process |
| Free T3 | 3.04 pg/mL | Within euthyroid range |
| Free T4 | 1.07 ng/dL | Within euthyroid range |
| TSH | 0.37 µIU/mL | Euthyroid biochemical profile |

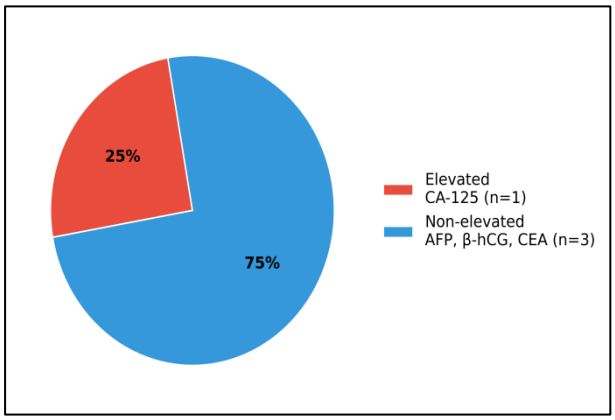


**Figure 4. Tumor-marker status at presentation.**
**Pie chart contrasts the single elevated tumor marker, CA-125, with the three non-elevated tumor markers evaluated preoperatively.**

Histopathological findings are summarized in Table 4. The excised left ovarian mass contained tissue derived from all three germ layers, but mature thyroid tissue predominated and exceeded 50% of the tumor. Thyroid follicles were arranged in microfollicular and macrofollicular patterns, lined by columnar epithelium and filled with colloid. Additional mature teratomatous elements included skin with adnexal structures, respiratory epithelium, cartilage, cholesterol clefts, and focal hemorrhage. No malignant transformation was described. Gross examination (Figure 6) and microscopy (Figure 7) together confirmed a benign struma ovarii.

**Table 4. Gross and microscopic pathological profile of the excised ovarian mass**

| Pathological domain | Observation |
|---|---|
| Tumor origin | Left ovarian teratomatous lesion derived from all three germ layers |
| Predominant component | Thyroid parenchyma comprising >50% of the tumor |
| Architectural pattern | Microfollicular and macrofollicular arrangement |
| Lining epithelium | Columnar epithelial lining of follicles |
| Follicular contents | Colloid |
| Additional mature elements | Skin with adnexal structures, respiratory epithelium, cartilage |
| Other microscopic changes | Occasional cholesterol clefts and areas of hemorrhage |
| Malignant thyroid-type features | Not described |
| Final diagnosis | Benign struma ovarii |

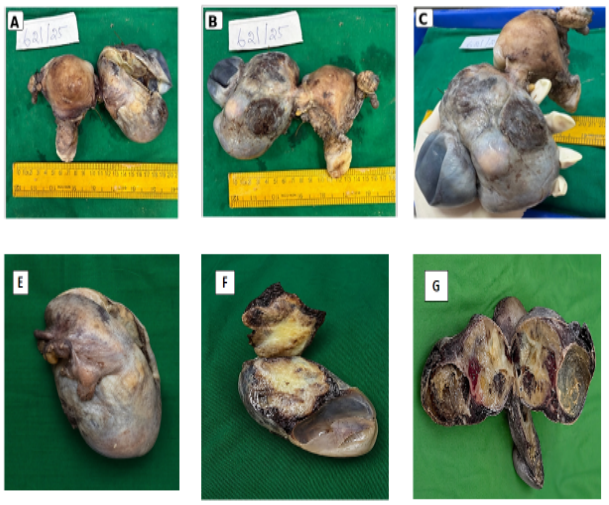



**Figure 6. Gross pathological appearance of the resected adnexal mass.**
**Composite panel demonstrates the external and cut-surface appearance of the excised ovarian lesion across multiple gross photographs.**

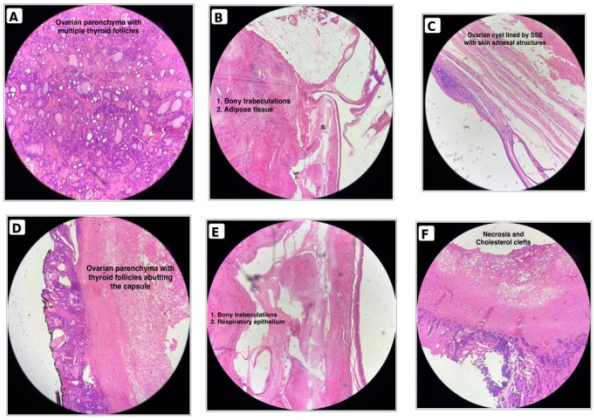



**Figure 7. Microscopic features supporting the diagnosis of struma ovarii.**
**Microscopic panel shows mature thyroid follicles with colloid and associated mature teratomatous elements without described malignant transformation.**

## DISCUSSION

This case illustrates why struma ovarii remains one of the more deceptive benign ovarian tumors in gynecologic practice. The patient did not present with thyrotoxicosis or a classic dermoid-type picture. Instead, she had a large complex adnexal mass, severe ascites, omental thickening, and markedly raised CA-125, a combination that naturally shifts preoperative thinking toward malignancy [5,6,8]. That clinical misdirection is well recognized in the literature and is one reason the diagnosis continues to be made predominantly after surgery rather than before it [11,12].

The epidemiologic setting in this case also fits published experience. Struma ovarii is uncommon, usually occurs in adult women, and is most often benign despite alarming radiologic or biochemical cues [1,2,10]. Prior series have shown that the spectrum is broad, ranging from incidental lesions to masses associated with pain, ascites, pleural effusion, menstrual symptoms, or endocrine manifestations [2,3,11]. Here, the symptom complex was largely compressive and gastrointestinal. Constipation, abdominal distension, poor appetite, and decreased urine output likely reflected the mass effect of a bulky lesion with ascites rather than intrinsic bowel pathology.

The radiologic appearance was similarly non-specific. Mixed solid and cystic morphology, fat density, and calcification can support a teratomatous process, but these same features do not exclude immature elements, rupture, or associated malignant change [3,4]. Dujardin and colleagues emphasized that imaging can raise

suspicion for struma ovarii in selected settings, particularly when multilobulated cystic masses contain vascularized solid components, yet the preoperative diagnostic confidence remains limited in routine practice [4]. In many patients, as in the present case, imaging narrows the field but does not settle the question.

The biochemical profile sharpened that uncertainty rather than resolving it. Markedly elevated CA-125 in the presence of ascites is a notorious confounder. Several reports have documented benign struma ovarii presenting with pseudo-Meigs syndrome or pseudo-Meigs-like physiology, leading to an initial diagnosis of ovarian carcinoma [7-9]. Even without pleural effusion, the coexistence of ascites and high CA-125 may reflect peritoneal irritation and mesothelial activation rather than malignant epithelial proliferation [5,8]. That mechanism provides a plausible explanation for why CA-125 may be disproportionately high in biologically benign disease.

One detail worth noting is the euthyroid hormonal profile. Although thyroid tissue defines struma ovarii morphologically, only a minority of tumors are functionally active enough to produce overt hyperthyroidism [2,10,12]. The absence of thyrotoxic symptoms in this patient therefore does not argue against the diagnosis. In fact, it reflects the more typical pattern, where the thyroid component is histologically obvious but endocrinologically silent.

Histopathology was the decisive step. Mature thyroid follicles occupying more than half of the tumor, with microfollicular and macrofollicular architecture and colloid, satisfy the diagnostic framework of struma ovarii [1,11,13]. The associated mature elements from other germ layers were in keeping with a teratomatous lesion, while the lack of described papillary nuclear features, infiltrative growth, or other malignant thyroid-type morphology supported a benign interpretation. This is clinically important because malignant transformation, although rare, changes both prognosis and follow-up strategy [13-15].

The management lesson is practical. When a complex ovarian mass presents with ascites and high CA-125, surgery is often performed because malignancy cannot be excluded safely beforehand. Yet postoperative interpretation should remain anchored to pathology, not to preoperative anxiety alone. The present case underlines that struma ovarii must remain in the differential diagnosis of apparently malignant adnexal masses, especially when tumor-marker elevation is isolated to CA-125 and cytology is negative for malignant cells [5,8,10].

This study has obvious limitations because it represents a single-patient descriptive analysis. No generalizable diagnostic accuracy estimates can be drawn, and serial postoperative CA-125 or long-term recurrence data were not available in the case summary. Even so, the case remains clinically instructive because it captures a recurring diagnostic trap: a benign monodermal teratoma presenting with the visual and biochemical language of ovarian cancer.

## CONCLUSION

Struma ovarii should be kept in the diagnostic field when a woman presents with a large complex adnexal mass, ascites, and elevated CA-125, even when malignancy appears more likely at first glance. In this patient, the final diagnosis depended on histopathological examination of the excised ovarian mass. A structured clinicoradiologic-pathologic approach helps prevent diagnostic overstatement and supports appropriate postoperative counselling in otherwise benign disease.

## REFERENCES


1. Ayhan A, Yanik F, Tuncer R, Tuncer ZS, Ruacan S. Struma ovarii. Int J Gynaecol Obstet. 1993 Aug;42(2):143-6. doi:10.1016/0020-7292(93)90628-A.
2. Yoo SC, Chang KH, Lyu MO, Chang SJ, Ryu HS, Kim HS. Clinical characteristics of struma ovarii. J Gynecol Oncol. 2008 Jun;19(2):135-8. doi:10.3802/jgo.2008.19.2.135.
3. Savelli L, Testa AC, Timmerman D, Paladini D, Ljungberg O, Valentin L. Imaging of gynecological disease (4): clinical and ultrasound characteristics of struma ovarii. Ultrasound Obstet Gynecol. 2008 Aug;32(2):210-9. doi:10.1002/uog.5396.
4. Dujardin MI, Sekhri P, Turnbull LW. Struma ovarii: role of imaging? Insights Imaging. 2014 Feb;5(1):41-51. doi:10.1007/s13244-013-0303-3.
5. Rim SY, Kim SM, Choi HS. Struma ovarii showing clinical characteristics of ovarian malignancy. Int J Gynecol Cancer. 2005 Nov-Dec;15(6):1156-9. doi:10.1111/j.1525-1438.2005.00225.x.
6. Loizzi V, Cappuccini F, Berman ML. An unusual presentation of struma ovarii mimicking a malignant process. Obstet Gynecol. 2002 Nov;100(5 Pt 2):1111-2. doi:10.1016/S0029-7844(02)02154-3.
7. Amr SS, Hassan AA. Struma ovarii with pseudo-Meigs' syndrome: report of a case and review of the literature. Eur J Obstet Gynecol Reprod Biol. 1994 Jun;55(3):205-8. doi:10.1016/0028-2243(94)90039-6.
8. Mitrou S, Manek S, Kehoe S. Cystic struma ovarii presenting as pseudo-Meigs' syndrome with elevated CA125 levels. A case report and review of the literature. Int J Gynecol Cancer. 2008 Mar-Apr;18(2):372-5. doi:10.1111/j.1525-1438.2007.00998.x.
9. Mostaghel N, Enzevaei A, Zare K, Fallahian M. Struma ovarii associated with pseudo-Meig's syndrome and high serum level of CA

125; a case report. J Ovarian Res. 2012 Mar 21;5:10. doi:10.1186/1757-2215-5-10.
10. Wee JYS, Li X, Chern BS, Chua IS. Struma ovarii: management and follow-up of a rare ovarian tumour. Singapore Med J. 2015 Jan;56(1):35-9. doi:10.11622/smedj.2015007.
11. Roth LM, Talerman A. The enigma of struma ovarii. Pathology. 2007 Feb;39(1):139-46. doi:10.1080/00313020601123979.
12. Singh P, Lath N, Shekhar S, Goyal M, Gothwal M, Yadav G, et al. Struma ovarii: a report of three cases and literature review. J Midlife Health. 2018 Oct-Dec;9(4):225-9. doi:10.4103/jmh.JMH_53_18.
13. Tondi Resta I, Sande CM, LiVolsi VA. Neoplasms in struma ovarii: a review. Endocr Pathol. 2023 Dec;34(4):455-60. doi:10.1007/s12022-023-09789-7.
14. Addley S, Mihai R, Alazzam M, Dhar S, Soleymani Majd H. Malignant struma ovarii: surgical, histopathological and survival outcomes for thyroid-type carcinoma of struma ovarii with recommendations for standardising multi-modal management. A retrospective case series sharing the experience of a single institution over 10 years. Arch Gynecol Obstet. 2021 Apr;303(4):863-70. doi:10.1007/s00404-021-05969-0.
15. Zamani F, Abdolrazaghnejad A, Ameli F, GHashghaee S, Nassiri S, Zamani N. Struma ovarii: a case report and review the literature. Int J Surg Case Rep. 2022;95:107318. doi:10.1016/j.ijscr.2022.107318.