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Benign Struma Ovarii Presenting as a Large Multicytic Ovarian Mass: Case Report

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Case Report

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Abstract

Background

Struma ovarii is a very rare form of ovarian teratoma with thyroid tissue present in the ovarian mass. A struma ovarii is categorised based on 50% or more of solid tissue being thyroid tissues. This particular entity can be an adult teratoma with distinct diagnostic challenges by virtue of its peculiar features, including thyroid hormone production. The tentative diagnosis is examined in a perimenopausal woman, with long-standing lower abdominal distention.

Case Presentation:

A 42-year-old woman, with a parity of 4 presented with a two-year history of intermittent episodes of dull lower abdominal pain associated with a feeling of a mass descending across her abdomen. This was associated with episodes of nausea, occasional vomiting, and dyspareunia for about five months. The patient also had irregular heavy menstrual periods for a similar duration. History did not reveal any signs of hyperthyroidism, Abnormal Uterine bleeding nor urinary tract symptoms. On physical examination, a firm, immobile, well-defined suprapubic mass was noted. Evaluation with abdominopelvic ultrasound showed a large, complex left adnexal cystic lesion with multiple septations. The patient was taken up for an exploratory laparotomy. Intraoperatively, a large, tortuous, multi cystic mass and highly vascularized, arising from the left ovary was found, and a left salpingo-oophorectomy was performed. Histopathological examination revealed a multicystic ovary with solid areas that contained seromucinous fluid and hemorrhage. Histological verification was made by the demonstration of ovarian tissue containing 80–90% benign thyroid follicles of varied sizes lined with cuboidal epithelium; with foci of calcification; and no evidence of malignancy. The patient made an uneventful postoperative recovery

Conclusion

Struma ovarii is tough to diagnose because it mimics so many other conditions and rarely causes thyroid symptoms. In women of reproductive age who have complex ovarian masses, it's worth keeping in mind, even if their thyroid tests are normal. The only way to be sure is to look at the tissue under a microscope after surgery, which, for benign cases, also solves the problem.

INTRODUCTION

Struma ovarii is a rare and specialized form of mature cystic teratoma of the ovary with a marked

proportion of the thyroid tissue[1]. The presence of a 50% overall tumoral mass of thyroid tissue is a requisite indication of the diagnosis. This condition represents around 2–5% of all ovarian teratomas and is most commonly found in women of reproductive and perimenopausal age [2, 3].

There are two points of clinical significance for struma ovarii. Firstly, it has a certain amount of diagnostic challenge due to its heterogeneous nature. Patients may be asymptomatic or present with nonspecific symptoms such as abdominal pain, distension, or the presence of a palpable mass, generally mimicking other benign or malignant ovarian neoplasm.

Second, about 5–15% of patients with struma ovarii may demonstrate clinical or even subclinical hyperthyroidism due to the autonomous function of the ectopic thyroid tissue: a condition occasionally referred to as "struma ovarii with hyperthyroidism" or Marion's disease[4]. This hormonal activity can complicate patient management and necessitate a thorough endocrinological evaluation. Almost all cases are benign, but malignant transformation within the thyroid component is rare [5]. Due to its exceptional rarity and diagnostic complexity, a case report on struma ovarii would greatly add to our understanding of a well-established condition with varying clinical presentations. Accordingly, we present a case of benign struma ovarii on a 42-year-old woman with chronic lower abdominal pain and a mass who had the diagnosis established after histopathologic analysis.

CASE REPORT

A 42-year-old woman, para 4 (all alive) was seen at the clinic as a referral from a peripheral polyclinic having complained of lower abdominal pain of 2 years' duration. The pain was described as a dull, non-radiating pain which had been intermittent since its inception. She had been to several health facilities but got no relief from the pain. 5 months prior to presentation client began to have the sensation of a mass in her lower abdomen. This was associated with nausea, some occasional vomiting and dyspareunia. However, she denied the presence of bleeding per vaginum, any vaginal discharge or fever and changes in bowel habits or urinary symptoms. She had no features of hyperthyroidism. The woman reported experiencing irregular, heavy menses usually requiring the use of about 3 to 4 moderately soaked pads a day. On physical examination, she had a well-defined and firm suprapubic mass, measuring about 19 cm X 12 cm that was freely mobile. A clinical suspicion of an ovarian mass was made, and an abdominal ultrasound scan was done to confirm the diagnosis. The bedside ultrasound scan showed an average sized uterus with a cystic lesion noted at the left adnexal region, with multiple septations and fluid debris layer measuring about 14.5 x 11.2 x 14.4 cm. (Fig 1). The lesion showed no flow on color Doppler interrogation. Other intra-abdominal structures were normal. A full blood count showed normal white cell count with a hemoglobin level of 12.5 g/dL and normal platelet count.

As part of the preoperative evaluation, thyroid function tests and CA-125 were normal. Additional imaging such as CT and MRI were not done, because we are in a low resource setting health facility where advance imaging is not readily available.

Patient was counselled on the diagnosis, the need for an Ovarian cystectomy and the possibility of a salpingo-oophorectomy depending on intraoperative characteristics of both the cyst affected structures.

Intraoperatively, it was noted that the woman had multiple cysts compacted into a single mass on the left ovary (fig A). The mass measured about 15 x 15 x 15cm and was tortuous and highly vascularized (fig B). On gross assessment of the cyst, it looked malignant, which informed the rationale for the definitive surgical approach. Patient had a normal right fallopian tube and ovary (fig C). A left salpingo-oopherectomy was done successfully and patient had an uneventful recovery post operatively. The entire tissue was sent for histopathology.

The sample received by the pathologist was formalin-fixed left ovarian cyst with left fallopian tube measuring 16 x 14 x 12 cm. The ovary was grossly multicystic with solid areas with a normal fallopian tube. Cut sections of the ovary showed multi-loculated cyst with serous mucinous content and had areas of haemorrhage intermixed with sloid tumour areas. Microscopically, there were areas of ovarian tissue consisting of 80 to 90% benign thyroid follicles of variable sizes lined by single cuboidal epithelial cells with foci of calcifications. (Fig D-F). No malignancy was seen. Immunohistochemistry was considered to further exclude malignant transformation; however, it could not be performed because we are in a low-resource setting health facility where such advanced laboratory techniques are not readily available A histopathological diagnosis of benign struma ovarii was made.

DISCUSSION

Ovarian germ cell tumours arise from primordial germ cells of the ovary, and they make up about 20-25% of all ovarian neoplasms. Struma ovarii is a rare, highly specialised germ cell tumours and makes up about 5% of all ovarian teratomas. Most reports of struma ovarii have been in women in the fifth and sixth decades of life. There have been some cases in children as young as 10 years old.[6]

Most cases of struma ovarii are unilateral with studies showing a predilection for the left ovary. [7] Studies have shown that about 6% of cases are bilateral. Patients with struma ovarii usually present with symptoms such as lower abdominal pain, sensation of a pelvic mass and changes in menstrual cycle. Others may present with back pain and urinary problems. Similar to other ovarian tumours, struma ovarii may cause ascites and hydrothorax [8]. The features of hyperthyroidism are not common in women but appears in about 5 to 8% of patients [9]. In patients who are hyperthyroid, there may be low levels of serum thyroid-stimulating hormone (TSH) but elevated levels of free thyroxine (T4) or triiodothyronine (T3). Typically, patients do not present with goiter but have raised levels of serum thyroglobulin.

Like all ovarian tumours, the use of ultrasonography is helpful in diagnosing struma ovarii. The tumour appears as a heterogeneous mass on conventional ultrasound. The characteristic feature of struma ovarii on ultrasound is the presence of a well-defined solid tissue with smooth margins that appears vascularised on doppler study; commonly known as the “struma pearl”[10]. It is not uncommon to find ascites with sonography. The diagnosis of struma ovarii is made on histopathology. The tumour is mostly solid and may have cystic areas and tumour size does not typically exceed 10cm [11]. The typical histologic pattern may show microfollicular, macrofollicular or oxyphil adenoma with or without papillary hyperplasia [12]. On microscopy, it is composed of mature thyroid tissue consisting of colloid containing follicles of various sizes.

Differential Diagnosis of Multicystic Ovarian Masses

Struma ovarii shows a complex, multiseptate cystic and solid pattern in imaging studies because of its difficult diagnosis, necessitating detailed differential d

- **Mucinous or Serous Cystadenoma / Cystadenocarcinoma:** Often presenting as large, multi-septated masses with variable solid components and fluid debris layers.
- **Mature Cystic Teratoma (Dermoid Cyst):** Though containing fat or calcification, they can present with complex internal echoes.
- **Endometrioma:** Can manifest with thick multi-loculated septations and internal fluid-debris levels.

Preoperatively, the presence of smooth margins and a vascularized solid component on Doppler imaging frequently described as the "struma pearl": can hint at this condition, though it is seldom definitive. The implementation of multi-modal preoperative scoring and maintaining a high index of suspicion in perimenopausal women with complex masses is vital to optimizing the diagnostic and treatment strategy. This is highlighted in a recent extensive review by Alnaggar et al. (2025).[13]

The treatment of choice for benign struma ovarii is surgical resection of the tumour. Typically, an oophorectomy is done but on certain occasions a total hysterectomy with unilateral or bilateral salpingo-oophorectomy can be done because of the preoperative concern for ovarian cancer. Overall, the prognosis largely depends on the tumour’s histological features and the success of surgical intervention. Following treatment, the prognosis of benign struma ovarii is excellent and recurrence is not common.

CONCLUSION

Struma ovarii is an uncommon type of ovarian teratoma characterized by the presence of abundant thyroid

tissue within the ovarian tumor. This condition manifests with symptoms that mimic a range of benign and malignant ovarian tumors, complicating the process of preoperative diagnosis. In cases of complex ovarian masses affecting women in their reproductive and perimenopausal years, it is

important to include this condition in the differential diagnosis since most are benign, with only a few leading

to hyperthyroidism. Imaging techniques can provide diagnostic indications, yet the final diagnosis needs histopathological assessment which occurs after surgical procedure. Surgical management remains the treatment of

choice which typically results in complete recovery for all benign cases. Increased awareness of this rare entity among clinicians and pathologists is important for accurate diagnosis and appropriate management.

Declarations

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CONFLICT OF INTEREST STATEMENT
The authors declare no conflicts of interest

DATA AVAILABILITY STATEMENT

The authors declare all patients' data supporting the findings are in the Patient Folder at the Upper West Region Hospital

CONSENT FOR PUBLICATION:

Verbal and Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

TRANSPARENCY STATEMENT:

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the clinical events being reported; that no important aspects of the report have been omitted; and that any discrepancies noted during clinical management of patient have been explained in the report.

CONSENT FOR PUBLICATION:

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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Figures



Figure 1

Bedside ultrasound of cystic lesion

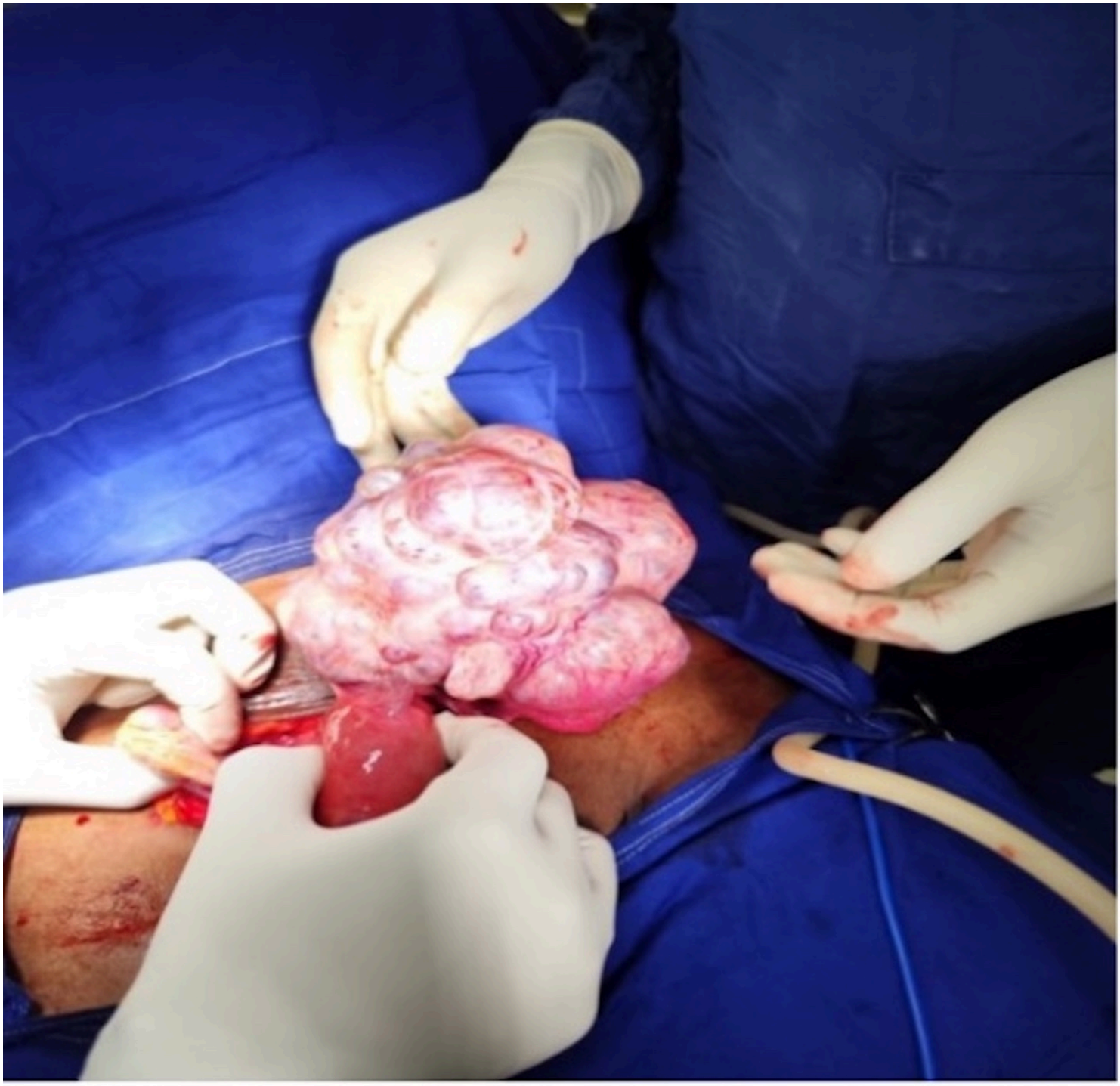


Figure 2

Fig A (cysts compacted in a single mass)



Figure 3

Fig B (tortuous and highly vascularized mass)



Figure 4

Fig C (normal right fallopian tube and ovary)

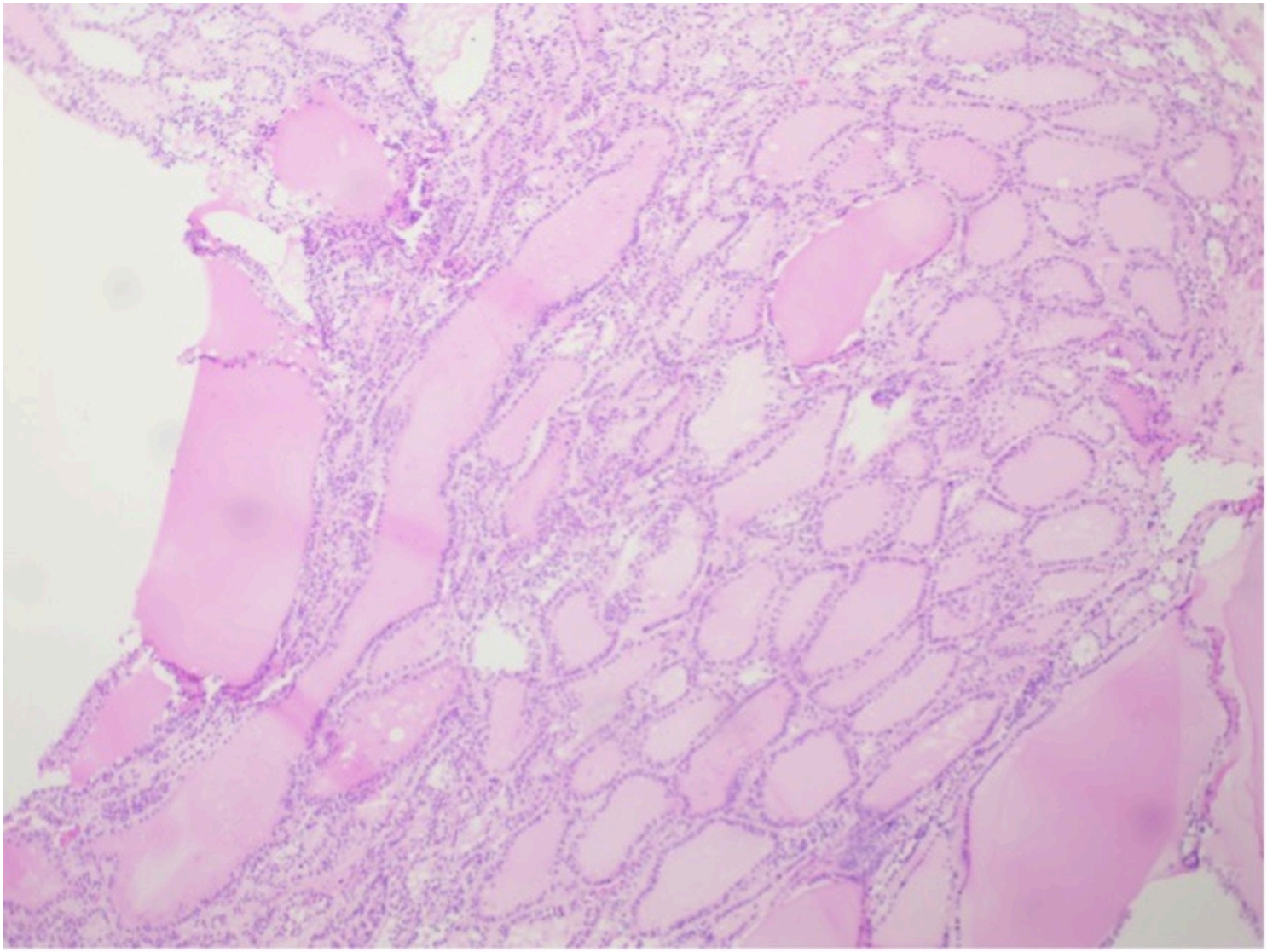


Figure 5

Fig D (H&E stain, high power view, showing thyroid follicles of varying sizes filled with eosinophilic colloid and lined by a single layer of cuboidal epithelial cells, consistent with mature thyroid tissue)

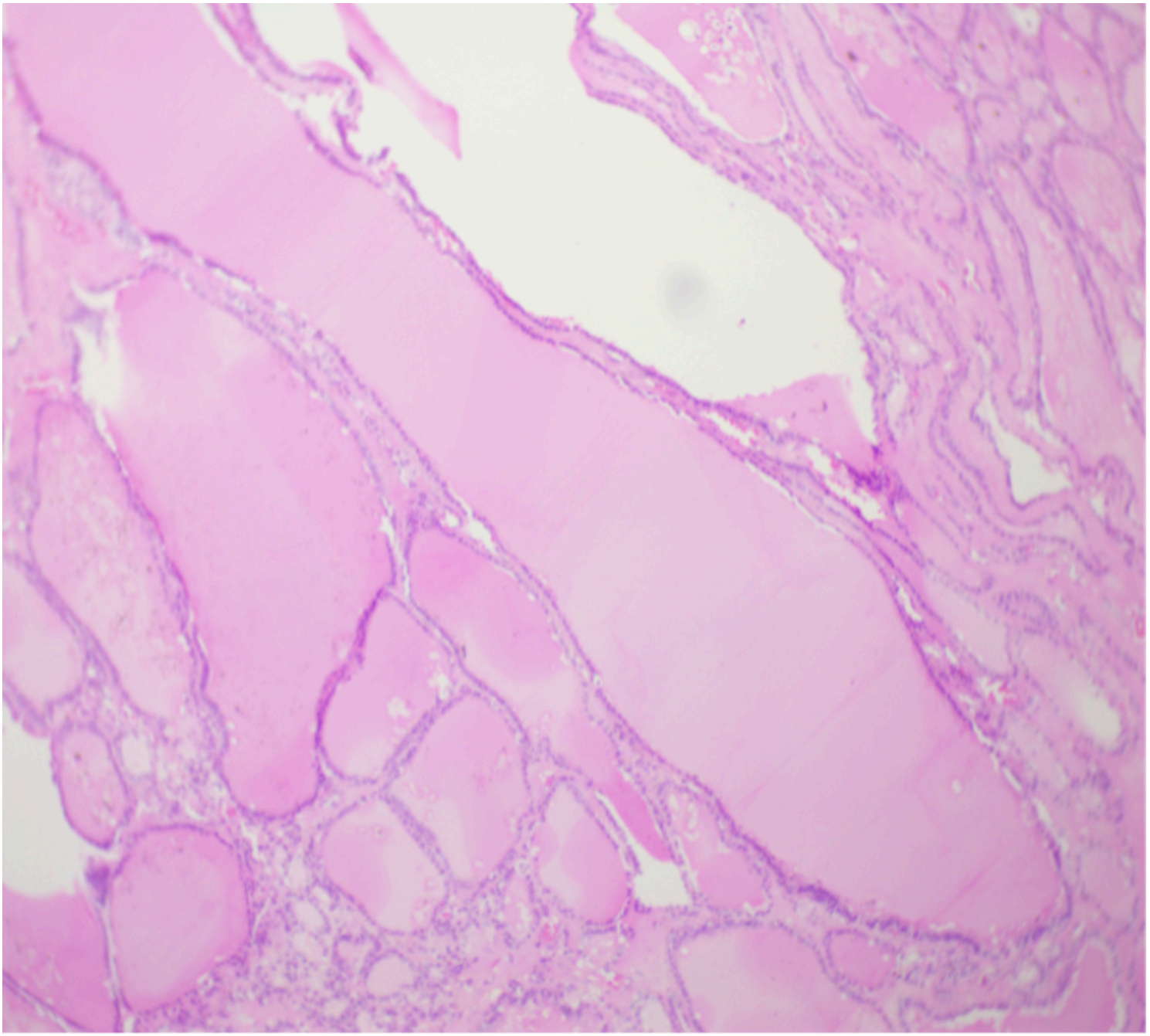


Figure 6

Fig E(H&E stain, low power view, demonstrating numerous closely packed thyroid follicles embedded within ovarian stroma, confirming the predominance of thyroid tissue characteristic of struma ovarii

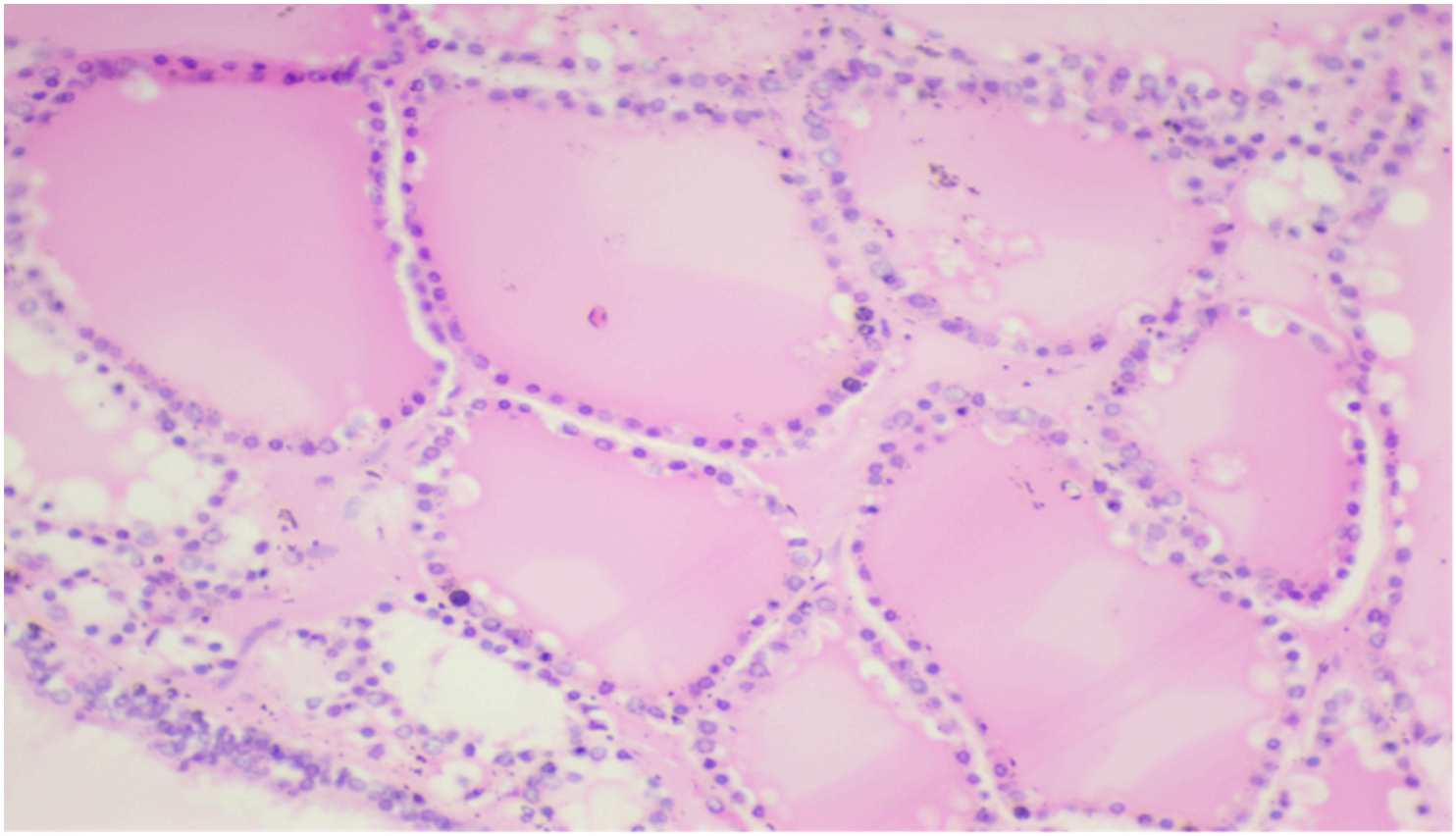


Figure 7

Fig F (Histological section showing large colloid-filled follicles with well-preserved architecture and absence of cellular atypia or malignant features, supporting a diagnosis of benign struma ovarii)