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*Keywords:* *fallopian tube carcinoma, transitional cell carcinoma.*

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# Primary Transitional Cell Carcinoma of Fallopian Tube: A Rare Entity with Review of Literature

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*Conclusion:* Clinicopathological characteristics and prognosis of primary transitional cell carcinoma of fallopian tube has to be distinguished from highly aggressive adenocarcinoma of fallopian tube. PFTC is a rare tumor and challenging to diagnose for clinicians and pathologists.

*Keywords: fallopian tube carcinoma, transitional cell carcinoma.*

## I. Introduction

Primary transitional cell carcinoma of fallopian tube (TCCFT) is a very rare gynecological malignancy. It is most commonly seen in postmenopausal women in their 4-7th decade of life. Because of its rarity, management guidelines are not available. Treatment is usually done on the lines of epithelial ovarian carcinoma (EOC). Only fewer than 25 cases have been reported worldwide.[1,2,3]

## II. Case Presentation

A 59 year old non diabetic, non hypertensive, postmenopausal woman presented with scanty foul smelling discharge per vaginum with intermittent spotting and abdominal distension of four months duration. There was no history of vomiting, loss of appetite or weight loss. Her bowel and bladder habits were also normal. Her general physical examination was grossly within normal limits. She had an ECOG (Eastern Co-operative Oncology Group) performance status of one. Per vaginal examination, revealed an adnexal mass in the right hemi pelvis. The same mass was felt in pouch of Douglas on per rectal examination. Pap smear was normal. Her routine blood investigations, chest X-ray and CA-125 (cancer antigen-125) (12 IU/ml) were within normal limits. CECT of the abdomen and pelvis showed a heterogeneous right adnexal mass of size 5×3cm. Ascites and lymph nodes were not seen. A provisional diagnosis of ovarian malignancy was made.

She underwent exploratory laparotomy, total abdominal hysterectomy (TAH) and bilateral salpingo ophorectomy (BSO) along with pelvic and para aortic lymph nodal sampling, infracolic omentectomy and peritoneal fluid cytology. Intra-operatively a solid-cystic mass with a smooth surface of size 5×5 cm was found arising from the distal 4.5cm of the right fallopian tube. The fimbrial end and both ovaries were normal. No significantly enlarged pelvic or para aortic lymph nodes were seen. Cut section showed a solid, fleshy, grey white tumor with papillary projections within the lumen of the tumor and necrosis was noted at center. Histologically the tumor was arranged in the form of exophytic papillae and solid sheets. The tumor cells were mitotically active, had moderately pleomorphic nuclei and conspicuous nucleoli (Figure no.1). Tumor was infiltrating the muscular wall of fallopian tube and reaching very close to the serosa. Both ovaries and the left fallopian tube were apparently normal. No tumor deposits were found on omentum. Peritoneal cytology was negative for malignancy.

The diagnosis of Primary TCCFT of the right fallopian tube was made, FIGO (International Federation of Gynecology and Obstetrics) stage IA. The patient received six cycles of adjuvant chemotherapy with paclitaxel (175mg/m2 on D1), and carboplatin (AUC 6 on D1) once in three weeks. After this she was kept on periodic follow up and was last seen in our OPD in September 2018. She was clinically and radiologically disease free, after a follow-up of ten years. Written informed consent was obtained from the patient for reporting purpose.

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## III. Discussion

Primary fallopian tube carcinoma (PFTC) is a rare entity, frequently seen in post menopausal women in their 4-7th decade of life. It accounts for 0.2-0.5% of all primary female genital malignancies.[1] Commonest histological variant of PFTC is adenocarcinoma (90%). However endometrioid carcinoma, clear cell carcinoma, squamous cell carcinoma, mixed carcinoma, sarcoma and transitional cell carcinoma have also been seen.[2]

Hu and Seldies et al. defined the criteria for PFTC which includes (1) tumor origin from endosalpinx, (2) Histological similarity with the epithelium of fallopian tube and (3) Normal ovaries and uterus on gross examination. If a foci of carcinoma present in these organs, it can be because of metastasis or double primary depending on the epicenter and tumor size.[2] TCCFT was first described by Federman & Toker.[3] According to Chin H et al.[4] TCCFT originates from transitional cell metaplasia of serosa or mucosal epithelium and the morphology is similar to transitional cell carcinoma of urothelium. To the best of our knowledge, fewer than 25 cases have been reported in literature as of now (Table no: 1).

*Table no.1:* Literature review on Primary fallopian tube transitional cell carcinoma (TCCFT).

| S. No. | Study | No. of cases | Histology | Tumor size (cm) | FIGO Stage | Surgery | Adjuvant treatment | Outcome |
|---|---|---|---|---|---|---|---|---|
| 1 | Kim JW et al. (1999) [1] | 1 | Primary fallopian tube transitional cell carcinoma | - | I | TAH + BSO[a] | Chemotherapy (Cisplatin based) | 12 months-alive |
| 2 | Babu MR et al.(2009) [2] | 1 | Primary fallopian tube transitional cell carcinoma | 14×8 | IC | TAH + BSO + Pelvic & para aortic LND[b] + appendicectomy, along with peritoneal biopsies | Chemotherapy (paclitaxel and carboplatin) | 12 months – alive |
| 3 | Keepanasseril A et al.(2015) [ 3] | 2 | Primary fallopian tube transitional cell carcinoma | 4.6×2.3 | I & II | TAH + BSO+ PLND+ infracolic omentectomy and multiple peritoneal biopsies | Chemotherapy (paclitaxel and carboplatin) | 18-20 months – alive |
| 4 | Takeuchi S et al. (1999) [6] | 1 | Primary fallopian tube transitional cell carcinoma | - | I | TAH + BSO + Pelvic & para aortic LND + infracolic omentectomy | Chemotherapy (Cisplatin based) | 4 years – alive |
| 5 | Mardi K et al. (2011) [9] | 1 | Primary fallopian tube transitional cell carcinoma | 3×3 | I | TAH + BSO+ infracolic omentectomy + pelvic & para aortic LN sampling | Chemotherapy (paclitaxel and carboplatin) | - |
| 6 | Gupta N et al.(2005) [10] | 1 | Primary fallopian tube transitional cell carcinoma | 2.5×2×2 | IV | TAH + BSO+ partial omentectomy | Chemotherapy (Cisplatin based) | - |
| 7 | Index case | 1 | Primary fallopian tube transitional cell carcinoma | 5×5 | IA | TAH + BSO+ infracolic omentectomy + pelvic & para aortic LN sampling | Chemotherapy (paclitaxel and carboplatin) | 10 years – alive |

[a] *TAH+BSO: Total abdominal hysterectomy and Bilateral salpingoophorectomy*
[b] *LND: Lymphnode dissection*

Signs and symptoms can be pelvic pain, pelvic mass and profuse serosanguineous vaginal discharge (hydrops tubae profluens) i.e. Latzok's sign. This typical triad of symptoms was reported in 15% of cases only.[5] Pectasides D et al. have reported that vaginal bleeding and abdomino-pelvic mass in is the commonest sign (50-60%) followed by dull aching or colicky pain (30-40%). The presenting features are similar to EOC but duration of symptoms is generally shorter. These tumors spread in similar fashion as that of EOC i.e. direct extension, dissemination to ovaries, peritoneum and trans-peritoneal seeding.[6] TCCFTs can also present with an abnormal pap smear. Adenocarcinoma was reported in 0% - 23% of cases in cervical cytology smears and squamous cell carcinoma was reported in one case report.[5] PFTC with exfoliated malignant cells in cervical Pap smear with negative cervical biopsy and endometrial curettage is also described in literature and it is rarely seen in cases of adenocarcinoma of fallopian tube. Pap smear was normal in our index case. So the likelihood of tubal malignancy should be kept in mind and must be confirmed by appropriate investigations.[7]

CA125 is elevated in majority of cases (>80%), which is an independent poor prognostic factor[2,8] and is monitored during follow up. Ultrasonogram (USG) and CECT scan are useful diagnostic tests however preoperative reporting rate of PFTC is low (<2%).[5] The index case also couldn't be diagnosed on USG or CECT



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because right ovary was not seen separately from adnexal mass. Morphology of these tumors is similar to that of transitional cell carcinoma arising from the urothelium. Grossly, the lumen of fallopian tube is filled with solid, fleshy, necrotic tumor and dilated papillary projections. Para-fallopian tube carcinoma is a recently recognized pathological entity where the tumor is presumed to arise from paratubal cyst or serosa of tube or walthard's rest. Therefore it is paramount to differentiate TCCFT from para-fallopian tube transitional cell carcinoma, to distinguish their clinical characteristics.[5]

Treatment is based on the lines of EOC. Surgery is the primary treatment i.e. TAH, BSO along with tumor debulking and lymph node dissection. Pelvic and para-aortic lymph node dissection has survival advantage over lymph node sampling. FIGO surgical staging is used as in EOC. Previous studies have suggested that TCCFT have higher rate of lymph node involvement as compared to EOC, so meticulous evaluation of lymph nodes should be done.[1,2] Adjuvant chemotherapy is given for all patients except for stage I disease without risk factors (muscular layer and fimbrial involvement). Our index case showed muscular layer infiltration by tumor cells. Combination chemotherapy with paclitaxel and carboplatin is the gold standard regimen as in EOC.[9] Uehira K et al.[10] compared clinic-pathological and immunohistochemical (IHC) characteristics along with relapse rate of transitional cell (TC) predominant PFTC and Non-TC predominant PFTC. They observed that microscopically, TC predominant tumors were more likely to have necrosis and spindle cells as compared to non TC predominant tumors. IHC markers like CA-125, CEA (carcino embryonic antigen), EMA (epithelial membrane antigen), cytokeratin and vimentin were not useful to differentiate the two types. Clinical parameters like age, symptoms, stage, serum CA-125 levels and malignant cytology of peritoneal fluid were similar in both the groups. Despite all these similarities and similar treatment, relapse free survival was higher in TC-predominant tumors as compared to non-TC predominant tumors (31.2 months versus 14.4 months).

## IV. Conclusion

To conclude, TCCFT is a very rare entity. Till date, only isolated case reports and retrospective series are present in literature. If a patient presents with clinical signs and symptoms like profuse vaginal discharge or bleeding, with negative cervical cytology and curettage, PFTC should be included in the differential diagnosis. Due to lack of information, the treatment and follow up is done on the lines of EOC. However, Due to high rate of lymph node metastasis in TCCFT, routine evaluation of lymph nodes should be done.

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All the authors critically reviewed the manuscript for its content, contributed to the interpretation and presentation of the review, and approved the final version of the same before submission.

Specific contributions by the individual authors have been highlighted below:

1. Dr. Arun Elangovan- Critically reviewed the article before submission not only for spelling and grammar but also for its intellectual content.
2. Dr. Chinna Babu Dracham- Constructed the idea for case report; prepared the manuscript, organised and supervised the course of the article.
3. Dr. Lokeswari Annam– Responsible for the patient's management, follow up.
4. Dr. Vani Bharani– Provided the tissue diagnosis, performed the immunocytochemistry for its confirmation and delivered the images regarding the same.

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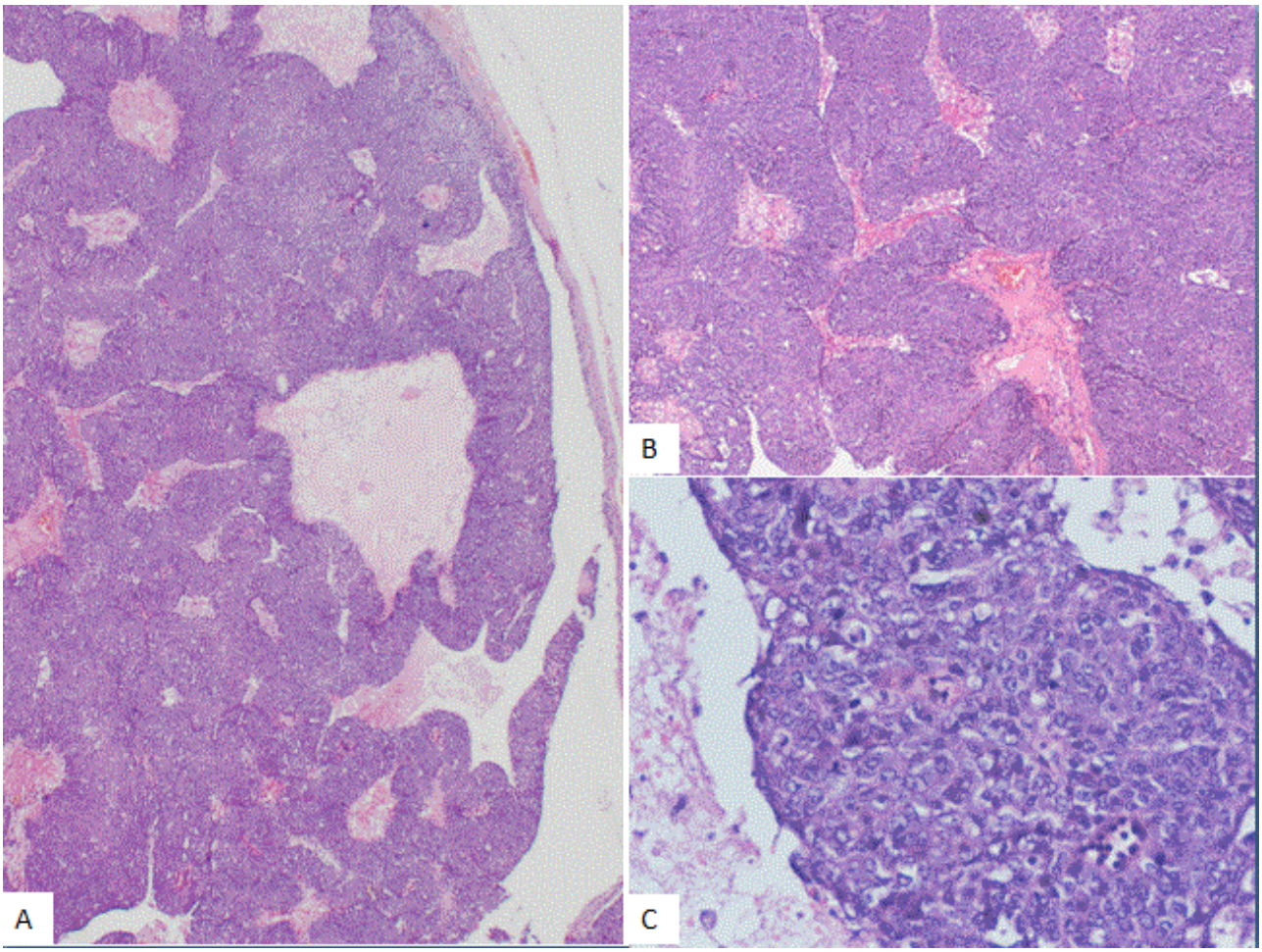



*Figure 1*

A. Tumor arranged in thick papillae with central fibrovascular cores (Hematoxylin and eosin10x)
B. Papillae lined by malignant epithelium, resembling urothelium (Hematoxylin and eosin 20x)
C. Tumor cells with moderate nuclear atypia (Hematoxylin and eosin 40x)

*Abbreviations:*
CECT: Contrast Enhanced Computed Tomogram
USG: Ultrasonogram
FIGO-IA: International Federation of Gynecology and Obstetrics - Stage IA
OPD: Out Patient Department
TCCFT: Transitional cell carcinoma of fallopian tube
PFTC: Primary fallopian tube carcinoma
CEA: Carcino embryonic antigen
EMA: Epithelial membrane antigen
CA-125: Cancer antigen-125



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