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# Successful Pregnancy with Placenta Accreta Spectrum and Uterine Atony Following Conservative Ovarian Cancer Treatment: A Case Report

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## ABSTRACT

**Background:** Pregnancy following ovarian cancer treatment is rare but increasingly reported due to delayed childbearing and the predominance of ovarian germ cell tumours among women of reproductive age. Fertility preservation has therefore become a critical component of management in selected cases.

**Case Presentation:** We report the case of a 28-year-old Nigerian nulliparous woman (P0+0) previously diagnosed with a mixed germ cell ovarian tumour (embryonal carcinoma and yolk sac tumour). She underwent right ovarian cystectomy and left salpingo-oophorectomy, followed by five cycles of adjuvant chemotherapy. Remarkably, she later achieved a spontaneous conception. The pregnancy was complicated by placenta accreta spectrum disorder (placenta previa-increta), and uterine atony. She underwent an elective caesarean section at term, during which conservative surgical management of obstetric haemorrhage was successfully performed, resulting in a favourable maternal and fetal outcome.

**Conclusion:** Previous ovarian cancer treatment, including surgery and chemotherapy, may increase the risk of abnormal placentation, while its association with uterine atony remains unclear. This case demonstrates that successful pregnancy is possible after fertility-preserving treatment for ovarian germ cell tumours, though close monitoring for placental complications is essential. Further research and long-term follow-up are needed to clarify these risks.

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## Introduction

Approximately 12.2% of ovarian cancers occur in women of reproductive age, and these consist mostly of borderline tumours, malignant germ cell tumours, and epithelial ovarian cancers

[1]. Malignant germ cell tumours account for about 5% of all malignant ovarian tumours but predominate among ovarian cancers diagnosed within the first three decades of life [2]. With the increasing delay in childbearing and the predominance of germ cell tumours in younger women, fertility preservation has become an essential consideration in the management of ovarian cancer. Although ovarian cancer treatment can negatively affect fertility, advances in early diagnosis and therapeutic modalities have made "fertility-sparing" treatment options and subsequent healthy pregnancies possible [3]. Malignant germ cell tumours are often unilateral, which allows for fertility-sparing surgery in carefully selected patients. This procedure, which preserves at least one ovary and the uterus, may be followed by adjuvant chemotherapy as in the present case, and remains a viable and recommended treatment approach in most situations [2-5]. For women in whom fertility-sparing surgery is not feasible, cryopreservation and transplantation of embryos, oocytes, or ovarian tissue are alternative options for future conception [1,4]. In our patient, however, these assisted fertility measures were unnecessary because the right ovary, fallopian tube, and uterus were preserved [1]. It is estimated that approximately 80% of women who undergo fertility-sparing surgery and chemotherapy retain reproductive function although their overall chances of conception remain lower than those of their counterparts without cancer history [3,6]. Notably, our patient achieved spontaneous conception without assisted reproductive intervention.

Reports on the effects of prior cancer treatment on subsequent pregnancies vary widely, ranging from no adverse outcomes to complications such as preterm birth, intrauterine growth restriction, and increased rates of caesarean delivery. In severe cases, abnormal placentation has been reported [3,7]. Awareness and anticipation of these potential complications are critical for optimizing feto-maternal outcomes, particularly to reduce morbidity and mortality associated with the placenta accreta spectrum (PAS). In the present case, the patient developed type IV placenta previa, placenta increta, and uterine atony, all of which were promptly and effectively managed by an experienced obstetric team, thereby averting major obstetric morbidity and mortality.

## Case Report

Miss U.N., a 28-year-old Nigerian nulliparous woman ($P_{0+0}$), presented with a one-year history of progressive abdominal swelling and a six-month history of heavy, prolonged menstrual bleeding. These symptoms were associated with unintentional weight loss, abdominal bloating, and early satiety. She reported no vomiting, diarrhoea, constipation, urinary symptoms, cough, or jaundice. There was no personal or family history of breast, ovarian, or colorectal malignancy.

On examination, she appeared chronically ill-looking. Abdominal examination revealed a firm, irregular, non-tender pelvic-abdominal mass corresponding to a 32-week gravid uterus in size. The mass was mobile from side to side and not adherent to overlying skin or surrounding structures. Pelvic examination revealed no remarkable abnormalities.

Laboratory investigations, including serum electrolytes, urea and creatinine, liver function tests, full blood count, and chest radiograph, were within normal limits. Pelvic ultrasonography revealed a markedly enlarged uterus containing a heterogeneous, highly vascularized mass extending from the pelvis to the epigastrium, with nodules ranging from 1.2 cm to 7.9 cm in size. The left ovary appeared normal, while the right ovary contained two anechoic thick-walled cystic masses measuring 3.1 cm and 4.1 cm, respectively. The liver was displaced superiorly into the thoracic cavity. Both kidneys were displaced but preserved normal size and cortico-medullary differentiation, with no hydronephrosis. The initial sonographic impression was suggestive of leiomyosarcoma.

Abdominopelvic computed tomography (CT) scan demonstrated extensive multilobulated, multinodular pelvic masses with cystic, necrotic, and calcific areas showing heterogeneous enhancement after contrast administration. The mass extended from the epigastrium to the suprapubic region and measured approximately 29 × 24 × 17 cm in craniocaudal, transverse, and anteroposterior dimensions, respectively. The uterus was normal in outline (6.6 × 3.0 cm) and distinctly separate from the mass. There was mild ascites, but no other remarkable findings. The CT differential diagnoses included abdominal tuberculosis, mesenteric mass, or abdominal lymphoma. Notably, the state of the ovaries was not specified, and no tumour markers were performed at that time.

The patient subsequently underwent exploratory laparotomy. Intraoperative findings revealed a giant complex left ovarian mass (32 × 24 cm), multiloculated, with the left fallopian tube tethered to it. A smaller right ovarian cyst measuring 4 × 4 cm was also observed. She underwent right ovarian cystectomy and left salpingo-oophorectomy.

Histopathological examination of the left salpingo-oophorectomy specimen revealed a mixed germ cell tumour composed of embryonal carcinoma and yolk sac tumour components. Cytological analysis of peritoneal aspirate was negative for malignant cells. The patient received five out of six scheduled courses of adjuvant BEP chemotherapy (Bleomycin, Etoposide, and Cisplatin regimen). She defaulted on the sixth cycle and was lost to follow-up thereafter.

Four years post-treatment, she got married and presented with a fertility desire. Repeat abdominopelvic ultrasound and serum alpha-fetoprotein (AFP) assay were normal. She was counselled and supported toward conception. She subsequently conceived spontaneously and booked for antenatal care at 21 weeks + 6 days gestation. Routine investigations were normal except for ultrasonography, which showed a low-lying placenta covering the internal cervical os. Serial ultrasound at 32 weeks confirmed Type IV placenta previa. She was counselled and scheduled for elective caesarean delivery at 37 weeks.

At 37 weeks' gestation, she underwent elective lower segment caesarean section under regional anaesthesia. Intraoperative findings included mild peritoneal adhesions, a small intramural leiomyoma on the uterine mid-segment, a well-formed lower uterine segment, Type IV placenta previa, a live male neonate weighing 2.5 kg with good Apgar scores, normal right fallopian tube and ovary, absent left adnexa, placenta increta, and uterine atony.

A midline abdominal incision through the previous scar was used to enter the peritoneal cavity (See Figure 1 and Figure 2). The uterine incision was made above the upper border of the placenta to deliver the baby safely. Segmental myometrial excision of the placental bed was performed, and underrunning sutures were placed to control bleeding. When uterine tone remained inadequate despite pharmacologic uterotonics, a Hayman compression suture and bilateral uterine artery ligation were applied, achieving haemostasis.

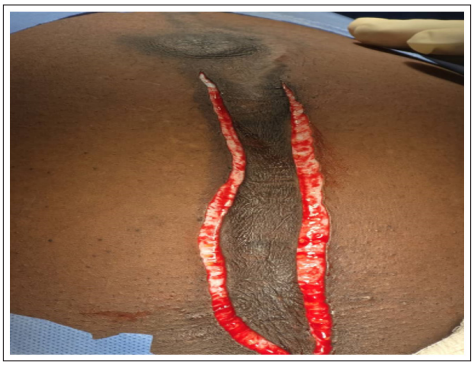

**Figure 1:** External Abdominal View of the Patients at Caesarean Section

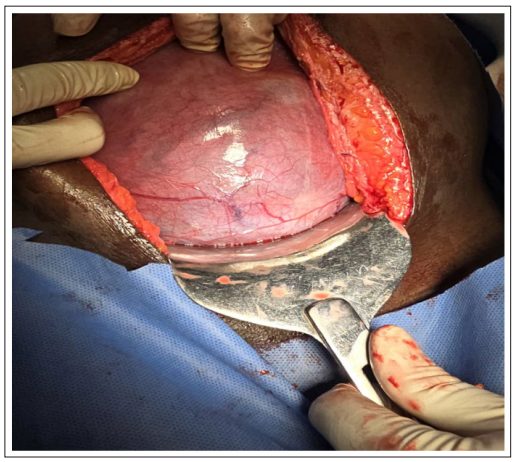

**Figure 2:** Intraperitoneal view of the patient during the caesarean section

The patient's immediate postoperative recovery was satisfactory. She remained stable throughout the postoperative period and was discharged home in good condition on the seventh postoperative day. Her two-week and six-week follow-up reviews were uneventful, with complete clinical recovery.

**Discussion**

Ovarian germ cell tumours (OGCTs) are uncommon malignancies that predominantly occur in women within their first three decades of life and are usually unilateral, thereby making fertility preservation a crucial component of management [2]. The standard of care for reproductive-age women with OGCTs is fertility-sparing surgery, in which the uterus and at least one ovary are preserved, followed by adjuvant combination chemotherapy [1]. The first-line regimen Bleomycin, Etoposide, and Cisplatin (BEP) is preferred due to its high efficacy and favourable survival outcomes, and it should be commenced shortly after surgery given the rapid growth rate of these tumours [5].

Although fertility preservation offers a viable reproductive outcome, the optimal timing of conception following chemotherapy remains uncertain. Current literature suggests a 1-2year interval after the completion of chemotherapy before attempting conception, to minimize the risks associated with possible oocyte damage and prolonged immunosuppression [3]. In the present case, conception occurred four years post-treatment, which may have contributed to the positive pregnancy outcome. Additionally, fertility sparing strategies for similar cases are possible. These include ovarian stimulation and oocyte cryopreservation prior to chemotherapy, as well as ovarian tissue removal and preservation. These modalities could be valuable considerations for patients with placenta previa-increta or similar conditions requiring extensive surgical intervention, potentially impacting future fertility..

The effects of prior cancer therapy on pregnancy outcomes remain varied and inconsistently reported. Chemotherapy and radiotherapy have both been implicated in endometrial and myometrial damage, leading to impaired implantation, abnormal placentation, and complications such as placenta previa and placenta accreta spectrum (PAS) disorders [7,8]. This association may explain the occurrence of placenta previa-increta in our patient, who lacked traditional risk factors such as previous uterine surgery or multiparity.

The American College of Obstetricians and Gynaecologists (ACOG) recommends elective caesarean hysterectomy with the placenta left in situ as the standard approach for PAS, to prevent catastrophic haemorrhage associated with manual placental removal [9]. However, this approach is not ideal in women desiring future fertility, such as in our patient. The International Federation of Gynaecology and Obstetrics (FIGO) supports conservative management in selected cases, especially when placental invasion is focal or partial, or where the placenta separates spontaneously [9,10]. In this case, conservative management, including segmental myometrial excision and uterine-sparing haemostatic sutures, was successful and ensured uterine preservation without major morbidity.

Prenatal diagnosis of PAS remains essential for effective multidisciplinary planning and individualized management. Early detection allowed our team to assemble a skilled surgical and anaesthetic team in anticipation of potential haemorrhage, significantly influencing the positive maternal and neonatal outcomes.

The cause of uterine atony in this nulliparous patient remains unclear. While pelvic radiation has been associated with impaired uterine perfusion and myometrial contractility leading to uterine atony there is insufficient evidence linking chemotherapy alone to this complication [11]. The possibility of chemotherapy-induced myometrial dysfunction remains an important area for future research, especially in survivors of ovarian germ cell tumours who later conceive.

This case highlights that fertility-sparing surgery followed by adjuvant BEP chemotherapy remains a safe and effective treatment approach for young women with OGCTs who desire future fertility. However, clinicians should be aware of the potential obstetric complications, including placenta previa, placenta accreta spectrum, and uterine atony, which may arise years after treatment. Preconception counselling, meticulous antenatal surveillance, and planned delivery in tertiary facilities are crucial to optimizing outcomes. Future research should focus on long-term reproductive and obstetric outcomes among survivors of ovarian germ cell tumours who underwent fertility-sparing surgery. In particular, prospective studies examining the potential chemotherapy-related uterine changes and their effects on placentation, myometrial contractility, and uterine vascularization are warranted.

A key strength of this case lies in its detailed longitudinal follow-up, demonstrating successful spontaneous conception and favourable perinatal outcome after intensive oncological therapy. The report also contributes to the limited body of evidence from sub-Saharan Africa on post-treatment fertility and pregnancy outcomes in OGCT survivors [12]. The new FIGO practice advice noted that

advances in cancer care have increased the number of survivors, leading to more pregnancies among women of reproductive age after cancer treatment [12]. However, the findings are limited by the single-patient nature of the report and the lack of molecular or histopathological follow-up data to confirm endometrial recovery after chemotherapy.

## Conclusion

Fertility-sparing surgery followed by combination chemotherapy is a viable treatment strategy for young women with malignant ovarian germ cell tumours. While successful pregnancies are achievable, clinicians should anticipate and prepare for possible obstetric complications related to previous oncologic treatment. Multidisciplinary care and vigilant antenatal follow-up are essential to ensure safe maternal and neonatal outcomes. Further research is needed to elucidate the mechanisms underlying abnormal placentation and uterine atony following chemotherapy, to guide safer reproductive counselling for cancer survivors.

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## Disclosure

The authors declare that there is no conflict of interest in this work.

## Ethical Consideration

Consent was obtained from the index patient to allow the reporting and displaying of pictures where necessary.

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## Author Contributions

OSU, CCA, VNO, CCO and GUE conceived, supervised the study and performed the surgery; CCO1, OKN, AVE, EUN, BIE, UCC, CTE, CMO and GTI analyzed data; OSU, CCA, VNO, CCO, GUE, CE, CGO, WAM, SCE, OMO, and JEM wrote the manuscript; OSU, CCA, VNO, CCO, GUE, CE, CGO, CAO, GOU, and ACE made manuscript revisions. All authors reviewed the results and approved of the final version of the manuscript.

## Ethics Approval and Consent to Participate

Not applicable

## Consent for Publication

Written informed consent was obtained from the index patient to publish this case report and any image which accompanied it.

## Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analysed during this study.

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