A remnant of the coccyx may lead to local recurrence. However, there is difficult to recognize the transition between coccyx and sacrum. Besides that, the tumour can infiltrate the sacrum and more extensive resection could be necessary. Intraoperative magnetic resonance imaging (MRI) can be used to assist resection of central nervous system tumours. We adapted this technique to sacrococcygeal tumours. The aim of this study was to discuss the operative technique of image guidance with MRI in the surgical management of sacrococcygeal tumours.
**Methods:** Retrospective analyses of the sacrococcygeal germ cell tumour operations that intraoperative MRI was used for, with a two Tesla magnet with a patient transportation system.
**Results:** There were 5 patients: 3 male and 2 female. Age at procedure was: 3 days, 4 months, 3 years, 4 years and 4 years. Two procedures were primary resection (one immature and one mature teratoma), and three for relapse (one in first year and two in second). The relapses were yolk sac tumour. MRI was used mainly to verify the coccyx resection in two cases, coccyx resection and complete tumour resection in one and level of sacrum resection in two cases. In two cases, the MRI demonstrated residual tumour and the need for more resection. In conclusion, intraoperative MRI could facilitate total resection of sacrococcygeal tumours through identification of remnant tumour in the surgical site and could help to confirm the extent of bone resection.

## GCT-60 Sacrococcygeal teratoma in children: Audit on clinical outcomes from a single centre

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**Background:** Due to anatomical location, surgical excision of sacrococcygeal teratoma (SCT) may cause neuropathic bowel and bladder. This audit reviewed our clinical practice in SCT management and assessed post-operative functional outcomes.
**Methods:** A retrospective single-institution audit performed at a tertiary centre from November 2008 to November 2018. Electronic database used to extract patients' clinical information which was recorded using a pre-designed data-collection proforma. Data were analysed and compared with the UK Children's Cancer Study Group's Experience [1].
**Results:** 21 neonates with SCTs based on imaging were audited. Only 17 patients had confirmed SCT on histopathology (11 females, 6 males). Thirteen (76%) had mature teratoma (MT), three immature (18%), one MT with focal immature elements (6%), one had a malignant germ-cell-tumour (6%). The excluded four patients had other diagnoses (perivascular myoid tumour, choristoma, yolk sac tumour, not specified). All patients survived and none had recurrence. Ten patients (59%) developed post-operative constipation mainly managed with laxatives. Of those, two had neuropathic bowel, one chronic whereas seven only had transient constipation. Six patients (35%) had post-operative urinary problems. Of those, four had neuropathic bladder managed with clean intermittent catheterisation, one had urinary frequency and one had only transient urinary problems. Two children (12%) had abnormal gait. In two cases, there was no information recorded and in one case gait assessment was not appropriate due to the patient's age. Finally, regarding cosmesis, three patients (18%) developed asymmetry, four puckering (23%) and four had wound dehiscence (23%). In three patients, no information was recorded.

### Reference

[1] Huddart S., Mann J., Robinson K., *et al.* Sacrococcygeal teratomas: the UK Children's Cancer Study Group's experience. *Pediatr Surg Int*. 2003 Apr;19(1–2):47–51.

## GCT-61 Controlled aspiration of large paediatric ovarian cystic tumours

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**Background:** Aetiology of large ovarian cystic masses in children includes physiological and neoplastic cysts. If radiology is suspicious for malignancy, cyst is usually removed via large midline incision to avoid risk of spillage, but is painful with cosmetically-unappealing incisions for young women. We present our experience of using a minimally-invasive approach first described by Ehrlich [1].
**Methods:** Retrospective review of girls with large ovarian cystic masses at our centre since 2007. Small pfannenstiel incision performed and peritoneal fluid sampled; cyst surface dried and dermabond™ glue used to stick Opsite™ dressing to cyst surface. Fluid then drained through the dressing to prevent any intra-abdominal leakage. Once aspirated, cyst and ovary delivered and ovarian-preserving cystectomy performed.
**Results:** Nineteen girls [median age 13 years (5–16 years)] were managed this way. Pre-operative imaging showed complex lesions in all patients (median diameter 16 cm and volume 2088 $cm^3$). All radiology reports described the possibility of a neoplasm. At surgery, 18/19 cysts were intact and removed without internal spillage. Histology: mature teratoma (11, including 1 bilateral), serous cystadenoma (3), mucinous cystadenoma (3, including 1 bilateral), mucinous cyst adenocarcinoma (1), retiform Sertoli-Leydig tumour, intermediate differentiation (1). The girl with a mucinous cyst adenocarcinoma had evidence of pre-operative rupture with ascites and malignant cells in the peritoneal fluid; she subsequently died. All other patients are well without evidence of recurrence. This is largest described series using Ehrlich technique and shows large cystic neoplastic lesions can be removed safely, with a minimally-invasive approach, while following oncological principles.

### Reference

[1] Ehrlich; *J. Pediatr Surg* 2007.

## GCT-62 Laparoscopic surgery in paediatric ovarian tumours

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**Background:** The laparoscopy procedure is not routine in paediatric ovarian tumour surgery. This study analysed the laparoscopy procedure in the surgical treatment of paediatric ovarian tumours.
**Methods:** A retrospective analysis of ovarian tumour patients admitted at a single institution between July 2014 and October 2018. Demographic and clinical features were reviewed.
**Results:** Twenty-nine patients, ranging from 11 to 222 months of age, were treated for 29 ovarian tumours: 19 (65.5%) malignant and 10 (34.5%) benign lesions. Median age at surgery was 12 years. The primary surgical approach was done in our hospital in 16 cases; three primary laparoscopy salpingo-oophorectomy were performed. One patient had a ruptured tumour in the initial laparotomy, laparoscopy was done post-chemotherapy (second-look surgery). For the patients who had initial surgery in other hospitals and staging information was incomplete, we performed a staging laparoscopy (four patients). We found one patient with positive peritoneal cells, one with remnant

tuba, and another one with incomplete ovarian resection. One patient in this group that had initial laparotomy, needed a second look surgery post-chemotherapy. Most frequent tumour stage were FIGO IA in 51.7% of cases (36.8% in malignant tumours). The most frequent surgery (89.6%) was unilateral oophorectomy. 25/29 patients are alive and disease-free. In conclusion, the application of laparoscopic techniques to paediatric cancer patients is a safe and effective diagnostic, staging and treatment modality.

## GCT-63 Imaging of germ cell tumours: Tips and tricks

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**Background:** Germ cell tumours account for 15% of ovarian tumours. Imaging of these patients provides important diagnostic information that is critical to appropriate management of these cases.
**Methods:** Typical imaging features will be demonstrated on different imaging modalities including ultrasound, CT and MRI. Features that are concerning for malignancy and distinguishing features for different types of germ cell tumour will be highlighted with particular reference to imaging protocols and acquisition. Examples of common pitfalls in image interpretation will be described. Diagnostic tips on image interpretation in residual and recurrent disease and benign mimics will also be demonstrated. This will be provided from cases reviewed at a tertiary centre of gynae-oncology cancer centre.
**Conclusion:** Correct image interpretation is vital to guide appropriate clinical patient management. Imaging of germ cell tumours can be challenging and awareness of common pitfalls as well as helpful features in interpretation of these cases is of benefit to the entire multidisciplinary team.

# High-Dose Chemotherapy

## GCT-64 High-dose chemotherapy (HDCT) for recurrent ovarian germ cell tumours (OGCT): A single centre experience

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**Background:** OGCT are a rare subtype of ovarian cancer accounting for less than 5% of malignant ovarian cancers. First-line platinum combination chemotherapy has a 70–80% cure rate. Scant data are available regarding the management of recurrent malignant OGCT. Here we present the outcomes with HDCT in patients with recurrent OGCT at Charing Cross Hospital, London, UK.
**Methods:** We performed a retrospective review of recurrent OGCT who underwent HDCT at Charing Cross Hospital. Demographics, disease variables, treatments and outcomes were analysed.
**Results:** Median age at the time of HDCT and histological subtypes will be presented as well as the median number of prior chemotherapy treatments. Median overall survival (OS) will be presented. The data will demonstrate that HDCT is an effective treatment for recurrent OGCT. Trials to prospectively evaluate HDCT as an early intervention in these patients seem justified.

## GCT-65 The management of late relapse post chemotherapy in testicular cancer: Optimal outcomes with dose intense salvage chemotherapy and surgery

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**Background:** Late relapse in advanced testicular cancer is defined as disease recurrence more than two years after primary therapy. The optimal management for this rare group of patients is unclear. We report one of the largest series to date of late relapse specifically following combination chemotherapy for metastatic disease, identifying prognostic factors and survival outcomes following relapse treatments.
**Methods:** We performed a retrospective analysis of patients treated for advanced testicular cancer in St Bartholomew's Hospital, London, UK between 1995 and 2016. We identified 53 cases of late relapse following chemotherapy for metastatic disease. Outcomes and interventions in this group were reviewed.
**Results:** Across the cohort, progression-free survival (PFS) at 36 months was 41% and overall survival was 61%. Multiple factors correlated with PFS.

1. Use of a dose-intense or high-dose relapse chemotherapy regimen significantly improved PFS compared to use of a conventional dose regimen (3 weekly ifosfamide-based regimens) ($p = 0.0036$, PFS 48 vs 9.8 months). Tumour burden between these two groups was similar, as evidenced by the lack of significant difference in levels of tumour markers.
2. Resection of residual disease post-relapse chemotherapy was associated with improved PFS ($p = 0.0076$, HR 3.46).
3. There was a non-significant trend towards worse PFS in the very late relapse group (>7 years from initial treatment).

This study provides new insight into prognostic factors in this rare late relapse group. These results suggest optimal treatment should include dose-intense/high dose chemotherapy when indicated and maximal surgical resection to all sites of disease.

## GCT-66 Haematopoietic stem cell transplantation for children with germ cell tumours: Experience of the National Multicentric Paediatric Germ Cell Group

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**Background:** High-dose chemotherapy with autologous haematopoietic stem cell transplantation (HSCT) is a therapeutic option mainly investigated in adult patients with germ cell tumours (GCTs). However, even in the adult population, the role of HSCT in GCTs remains controversial. Our objective is to describe the Brazilian experience with HSCT for children with GCTs.
**Methods:** We reviewed the medical records of all patients who underwent transplantation for treatment of extracranial GCTs at two Brazilian paediatric HSCT centres.
**Results:** From November 2001 to March 2018, 33 patients with GCT underwent autologous HSCT (17 male and 16 female). Their median