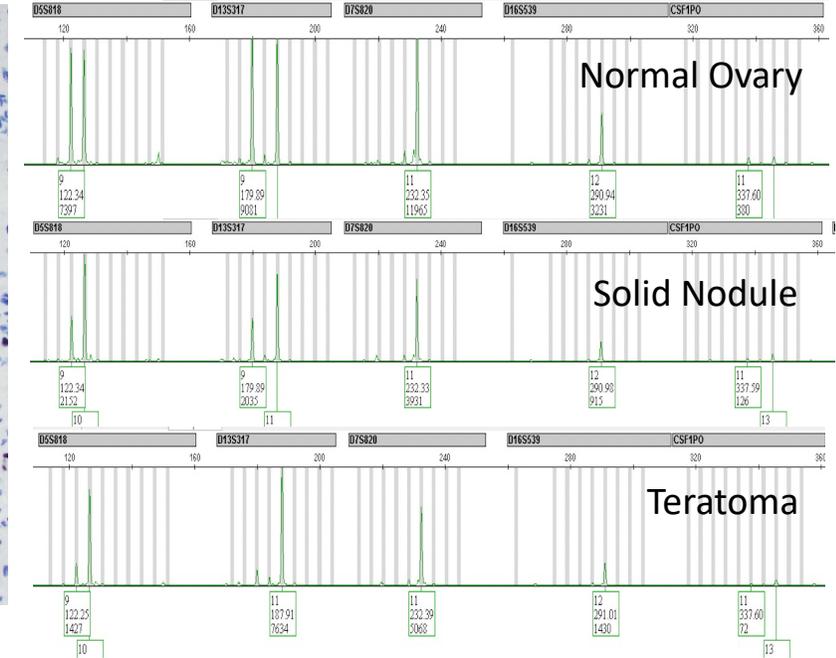
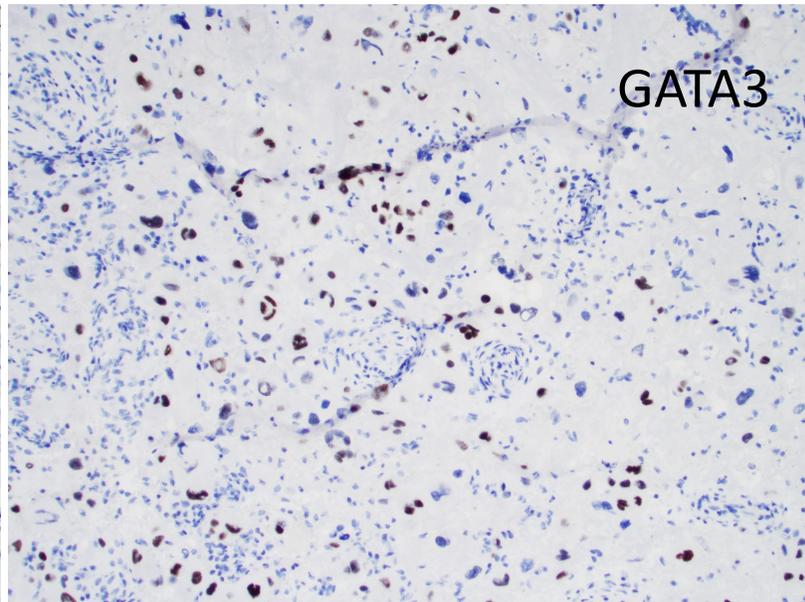
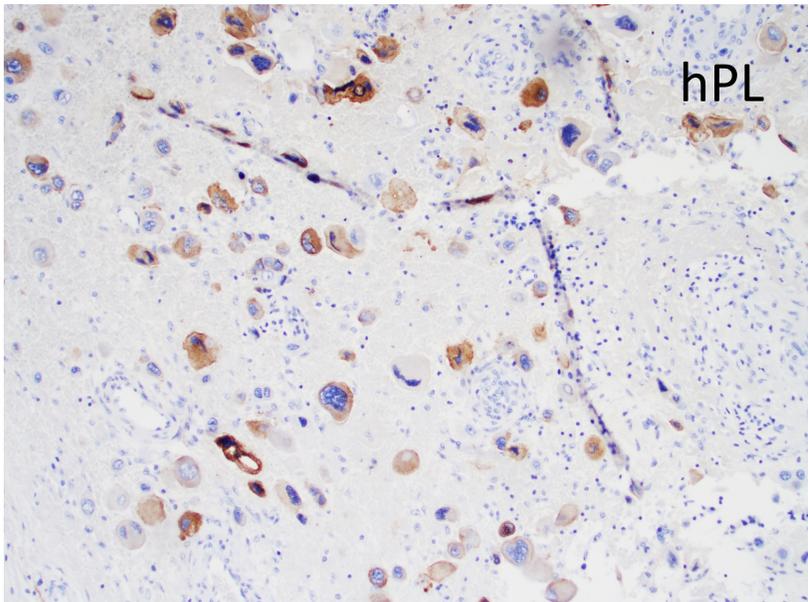
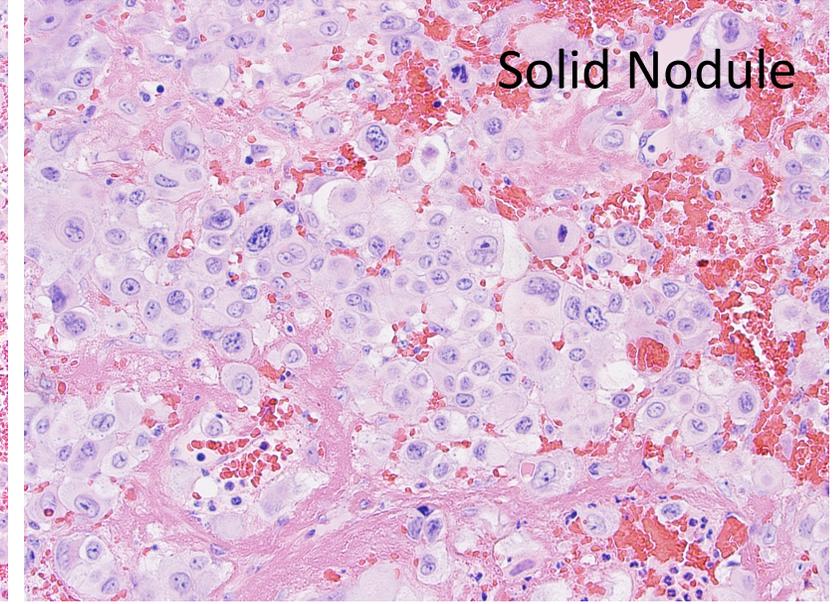
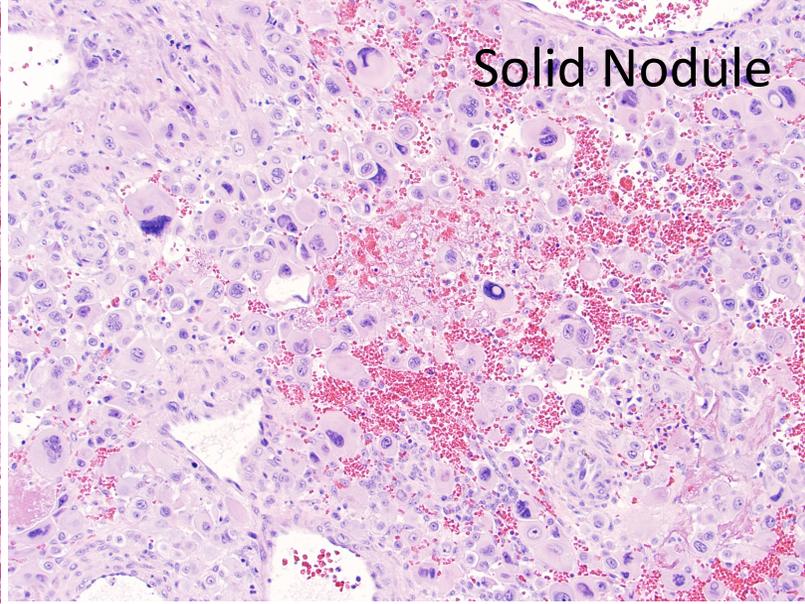
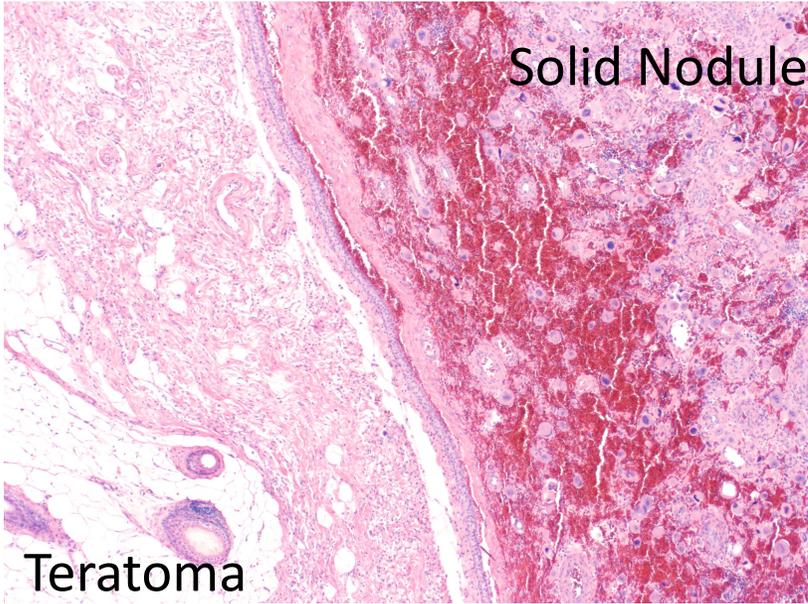




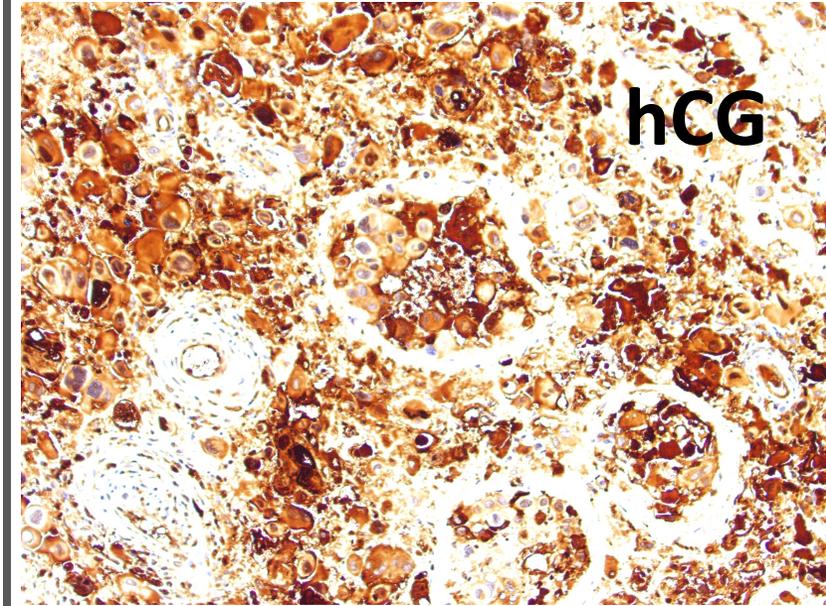
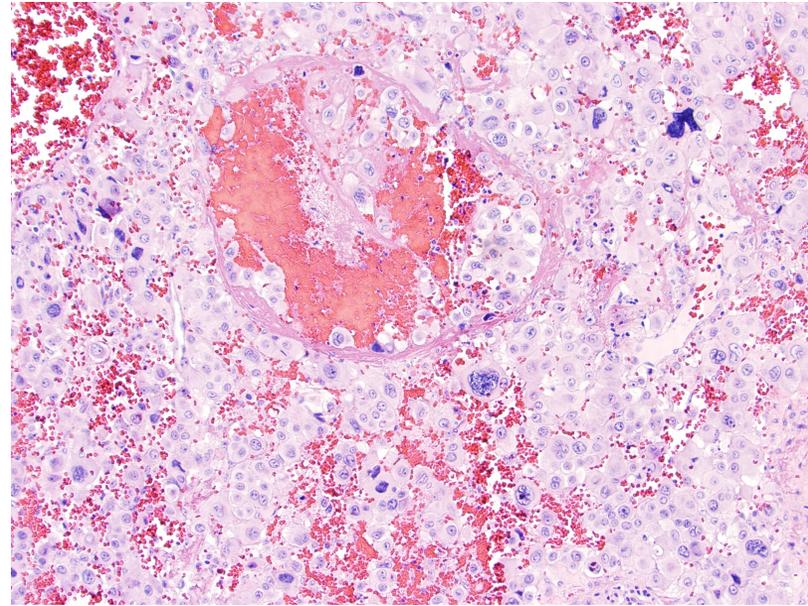
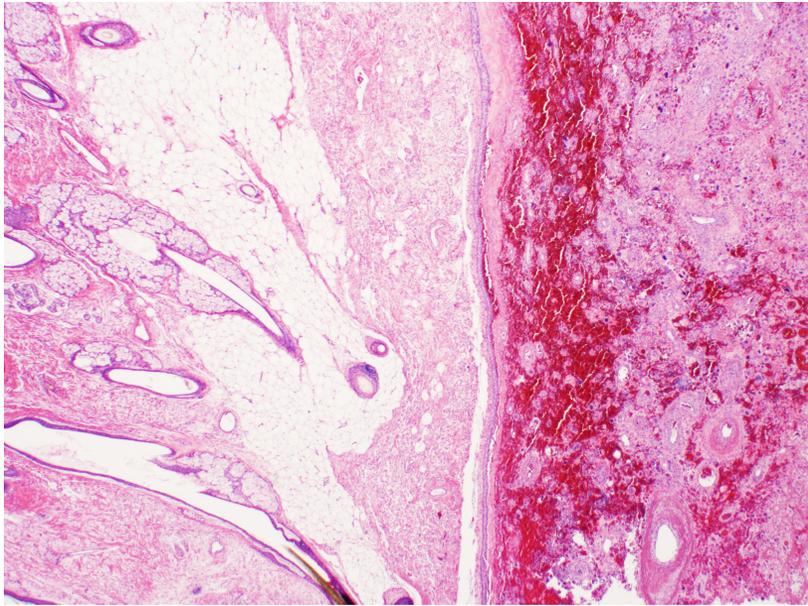
Case Presentation

21-year-old woman with clinical suspicion for ectopic pregnancy presenting with a left adnexal mass underwent oophorectomy. Sections of the ovary show a solid hemorrhagic tumor nodule in adjacent to a mature cystic teratoma.



Differential diagnoses

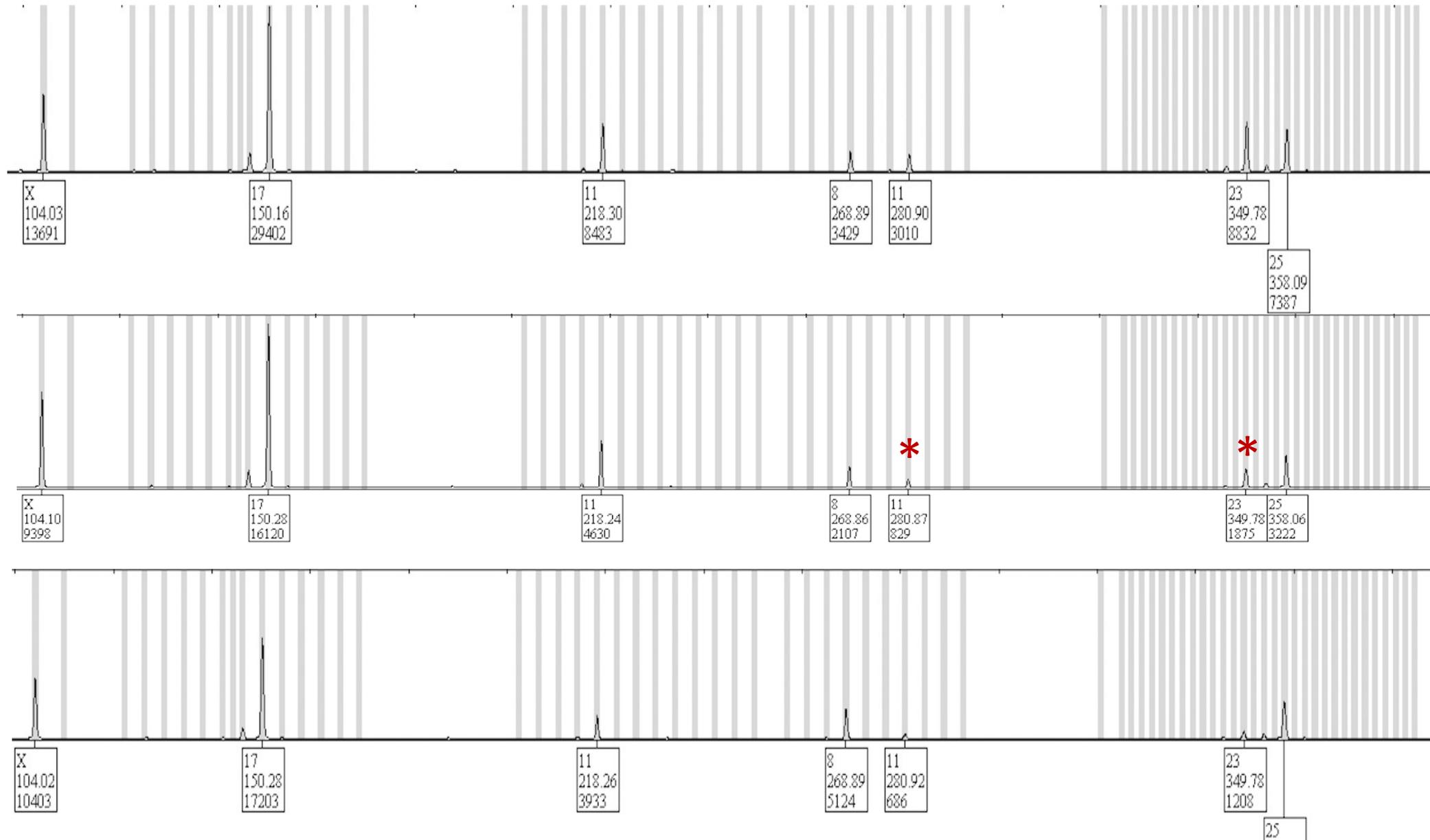
- A. Pregnancy luteoma
- B. PSTT of gestational origin
- C. PSTT of germ cell origin
- D. Melanoma arising in teratoma



Additional Histological Images

Histologically, the solid tumor nodule consists of sheets of large, polyhedral to round, predominately mononuclear intermediate trophoblast. The cells have abundant eosinophilic cytoplasm, and pronounced nuclear atypia with frequent large, convoluted nuclei. The tumor cells are positive for hPL, GATA3 and hCG. Biphasic growth pattern characteristic for choriocarcinoma is however not present.

Additional STR panel



Normal Ovary

Solid Nodule

Teratoma

DNA genotyping shows the presence of a shared homozygosity at all STR loci between the teratoma and the solid tumor nodule, in contrast to a balanced biallelic genetic profile of the normal ovarian tissue. Note minor contaminating allelic peaks at several STR loci due to the presence of non-neoplastic cells in the solid nodule (asterisks).

Final Diagnosis: Placental site trophoblastic tumor (PSTT) of germ cell origin arising from an ovarian mature cystic teratoma

Discussion

Non-gestational placental site trophoblastic tumor is very rare, primarily reported in the ovary likely as a result of malignant transformation of mature cystic teratoma (Xing et al. Ovarian Intermediate Trophoblastic Tumors: Genotyping Defines a Distinct Category of Nongestational Tumors of Germ Cell Type. *Am J Surg Pathol.* 2020;44:516-525). Their histological, cytological and immunohistochemical profiles are essentially identical to those of their gestational counterpart (see Y-GTD case of May 2023). It should be noted that gestational PSTT can occur in an ectopic gestational site including the ovary. Co-existing with an ovarian teratoma suggests a non-gestational PSTT and DNA genotyping offers an ultimate separation between the two types of PSTT. In a non-gestational tumor, the STR genetic profile shows similar allelic patterns between the tumor and the teratoma (as in this case). In contrast, the presence of unique paternal alleles at multiple STR loci confirms a gestational PSTT. Over 60% of ovarian teratomas harbor genetic homozygosity (Snir et al. Frequent homozygosity in both mature and immature ovarian teratomas: a shared genetic basis of tumorigenesis. *Mod Pathol.* 2017;30:1467-1475.) as illustrated in this case. The shared homozygosity between the teratoma and PSTT confirms their clonal evolution.