



## Mixed Germ Cell Tumour of Infantile Testis Showing Teretoma and Yolk Sac Component

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Received 02 January, 2016; Accepted 23 January, 2016 © The author(s) 2015. Published with open access at [www.questjournals.org](http://www.questjournals.org)

**ABSTRACT:-** Testicular germ cell tumors can be classified as seminomatous and non-seminomatous tumor (NSGCT) types. Mixed germ cell tumors are containing more than one germ cell component and are much more common than any of the pure histologic forms representing 32%-60% of all germ cell tumors. The composition of these tumors varies. Testicular tumours are less common in infancy than adult except in the case of cryptorchidism. Here we present a rare case of a mixed germ cell tumor composed of mature teratoma and yolk sac tumor in a 6 month old child.

**Keywords:-** Infant, Mixed germ cell tumour, Testis

### I. INTRODUCTION

Testicular cancer is a respectively rare neoplasm; It makeup approximately two percent of all malignant cancers inmen and account for up to ten percent of all malignant disease occurring within the male genitourinary system.

Most of these tumors occur in three age groups - infancy,late adolescence and early adulthood. More importantly,testis tumors are the most common malignant disease,developing in men between 20 and 40 years of age and are the third leading cause of death among men of this agegroup<sup>1</sup>.Tumors of germ cell origin account for 94% to 96% of all testicular neoplasms, and those of sex cord–stromal origin constitute 4% to 6%. The remaining testicular neoplasms of diverse histologic types are rare and account for approximately 1% of all testicular neoplasms<sup>2</sup>

Pathologically, testis cancers are divided into two classes;germ cell tumors which are derived from germinal epithelium and non-germinal tumors which are of gonadalstroma origin. Tumors of germ cell origin comprise about

95% of all testis cancer. Germ cell tumors are divided into two basic groups: seminomas which occur in approximately 40% of the population and non-seminomatous tumors (NSGC) which may be seen in pure or mixed form<sup>2</sup> NSGCs are further divided into the following five groups:1) embryonal carcinoma with or without seminoma, 2) teratoma with or without seminoma, which occurs in about 7% of the group;3) teratocarcinoma including teratoma with embryonal carcinoma, choriocarcinoma, or both with or without seminoma occurring in about 25% of the group;4) choriocarcinoma with or without seminoma or embryonal carcinoma or both account for the remaining 1-3%.Mixed germ cell tumors contain more than one germ cell component and are much more common than any of the pure histologic forms representing 32%-60% of all germ cell tumors. Essentially, any admixture of the germ cell tumors as seen in pure form may be seen, one of the most common admixtures being embryonal carcinoma and teratoma Minor foci of yolk sac tumor are common<sup>3</sup>

### II. CASE HISTORY

We present a case of 12 month old male child who was brought to Surgery OPD by parents with history of the scrotal swelling on right side since 5 months which was increasing in nature. H/o Trauma and pain and fever was absent..O/E a small 5x2 cm swelling was noted in right testis which was non tender,no redness,no warmth was noted.Birth history was unremarkable. His family history for same was negative.

Patient sent for USG examination which showed a large hypoechoic mass in right testis measuring 5.3x2.5 cm with no fluid in scrotal sac.Other investigation like CBC ,Urine routine and microscopy ,biochemistry and chest x ray was normal. His general physical condition was normal.He was operated for right orchidectomy under GA.Right testis with spermatic cord was removed and send for histopathological examination..After histopathological examination his AFP levels and HCG levels done and AFP levels was found to be increased very much..

Gross—Specimen was fixed in 10% neutral buffered formalin. Grossly specimen measuring 4.5x2.5 x1 cm and weighing 80 grams with attached spermatic cord m/s 1.5 cm in length, Epididymis was attached. External surface showing nodularity, attached tunica albugenia which was strongly adherent to underlying testis, vascular marking was prominent [Figure-1]. Cut surface showing grey white solid and microcystic areas [Figure-2] with one area of haemorrhage. Normal testicular tissue was present at periphery as a rim. Section from various areas including normal testicular tissue and spermatic cord was taken. No lymph node was found. in gross specimen.

Microscopy. Various H&E stained sections examined showing all three germ cell layer component like stratified squamous epithelium of skin which is ectodermal [Figure-3], mature cartilage tissue and blood vessels which is mesodermal and intestinal type of columnar epithelium which is endodermal [Figure-4], and respiratory epithelium and pigmented retinal epithelium [Figure-5] with fibro fatty tissue in stroma. At one place a small area showing microcystic pattern of yolk sac type showing round to oval cells, vesicular nuclei, mild eosinophilic cytoplasm and few extracellular hyaline bodies [Figure-6]. Schillar-Duval bodies not seen.

On the basis of histopathological examination a diagnosis of mixed germ cell tumour showing mature teratomous element with yolk sac component was offered.

### III. FIGURES

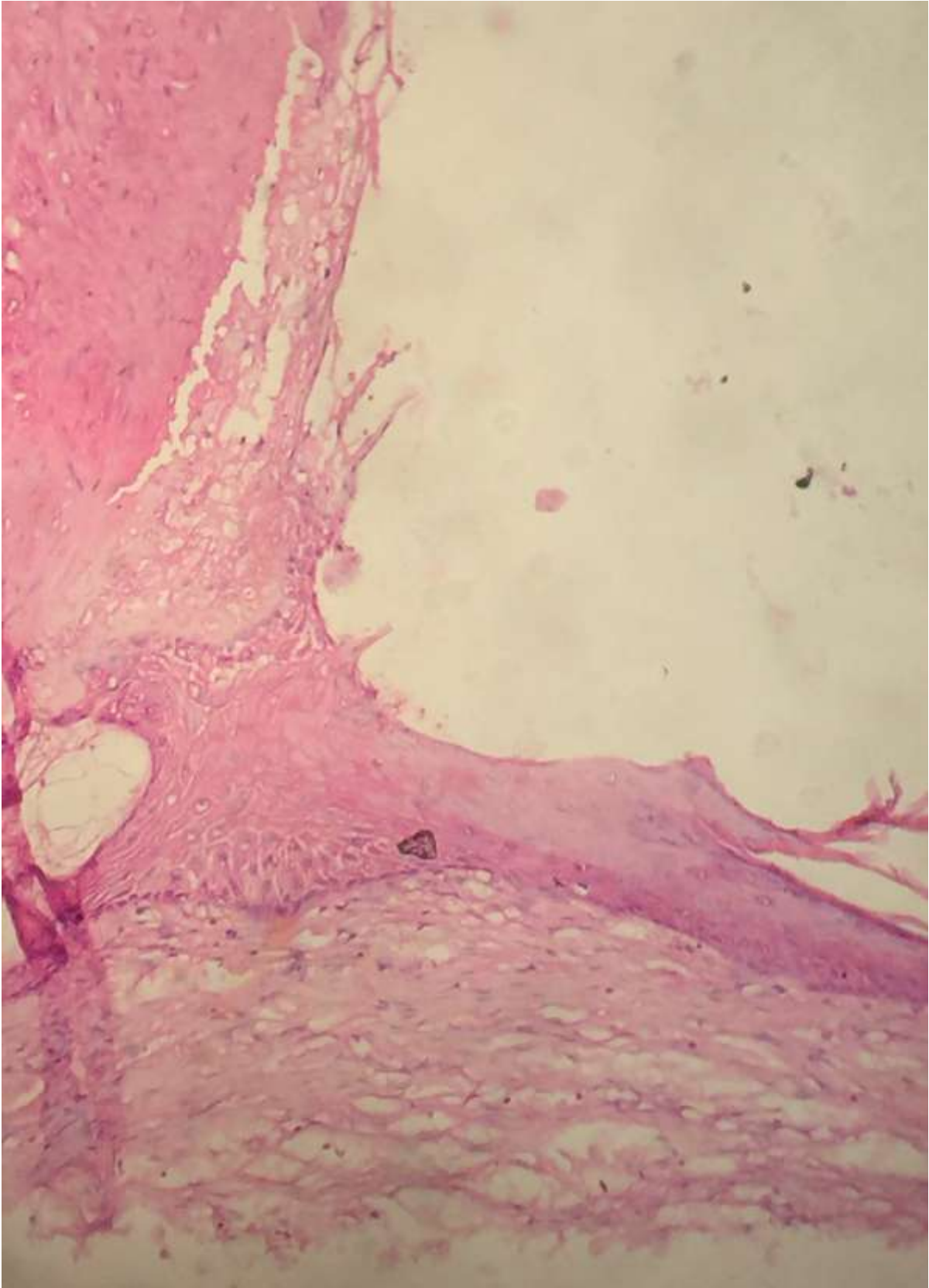
All photos taken by iphone 6 plus.



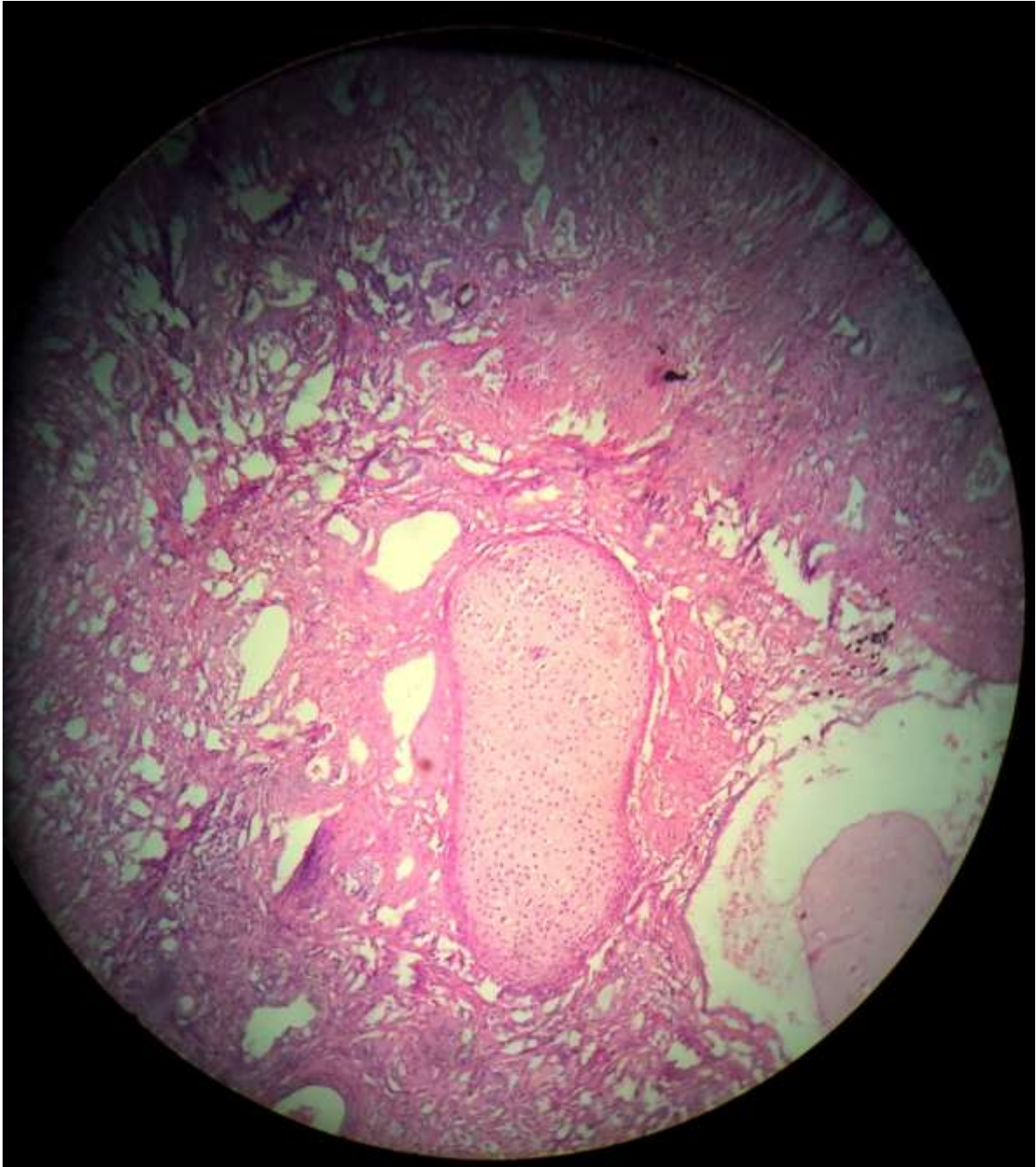
**Figure 1: Testis with tense shiny capsule with attached spermatic cord and epididymis.**



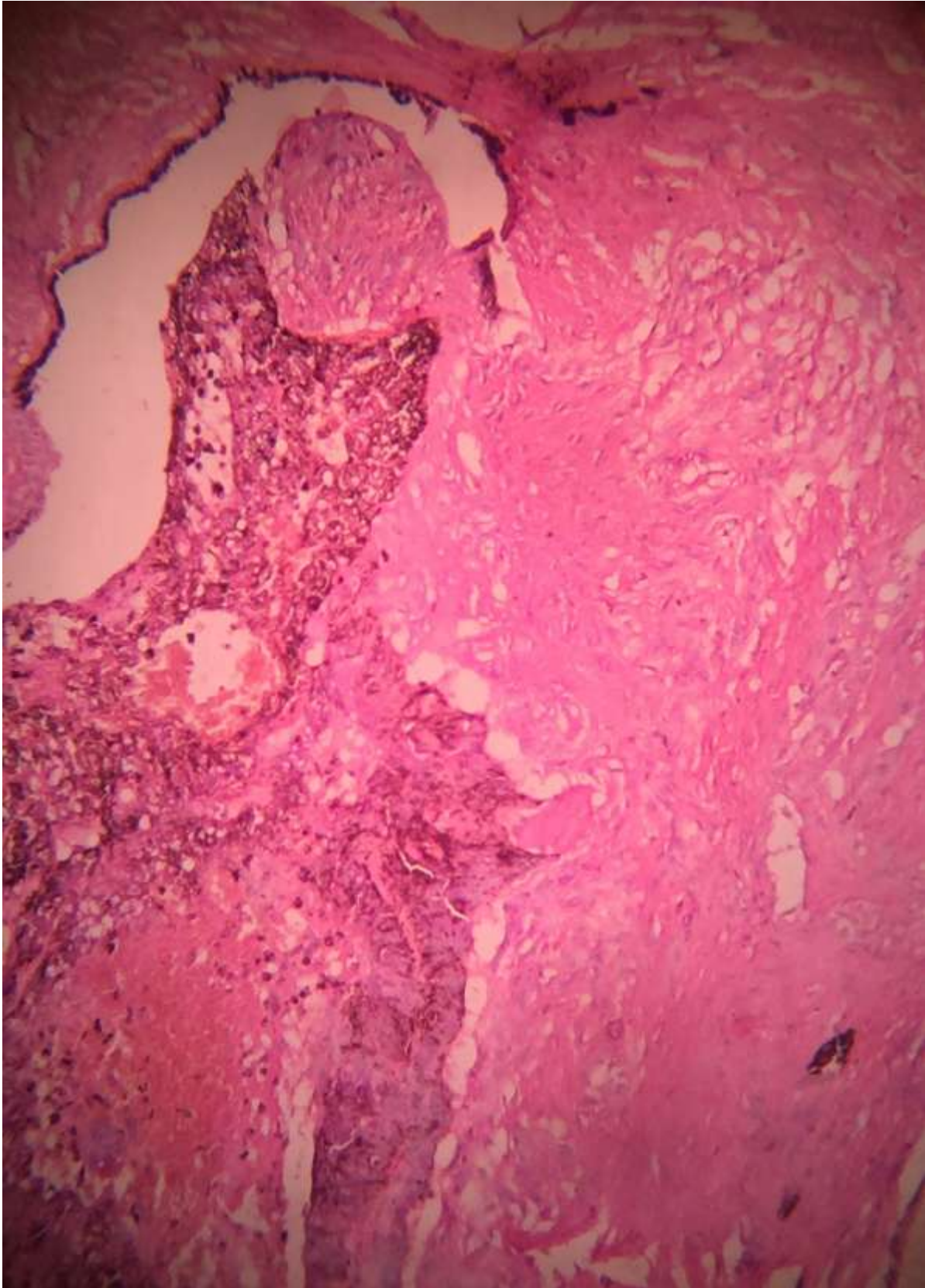
**Figure 2: Cut surface showing grey white, solid and microcystic areas with Normal testicular tissue at periphery.**



**Figure 3: section showing stratified squamous epithelium of skin type.**



**Figure 4:** section showing mature cartilage tissue in center with glandular epithelium lined by columnar cell with interspersed goblet cells at upper left.



**Figure 5: Teratoma Showing pigmented retinal epithelium.**

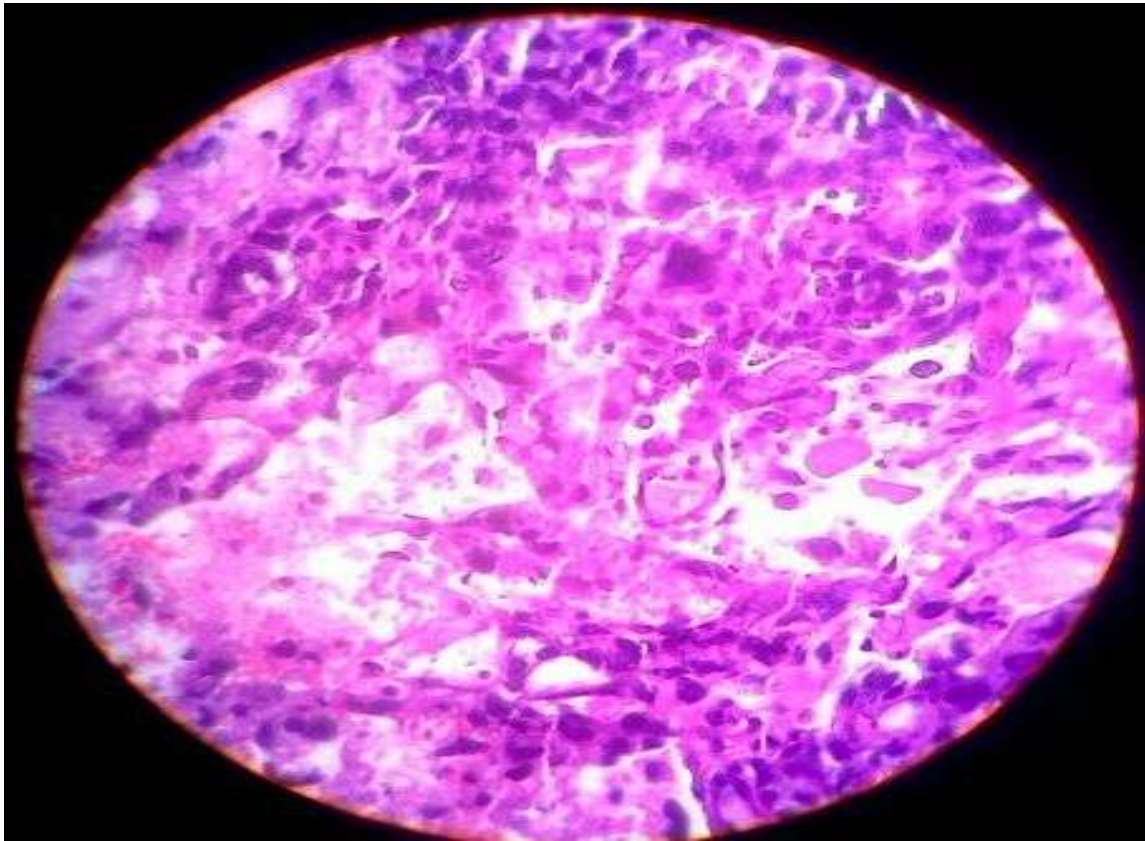


Figure 6 Tumor area showing yolk sac pattern with hyaline bodies

#### IV. DISCUSSION

Testicular teratoma is a sub-type of Non-Seminomatous Germ Cell Tumours (NSGCT) of the testis. Teratoma is a GCT that predominantly occurs in the gonads: the testis and ovaries. They contain well-differentiated or incompletely differentiated elements of at least two germ cell layers (endoderm, ectoderm and/or mesoderm). Mature teratomas are well differentiated relative to the germ cell layers. Immature teratomas are incompletely differentiated and are similar to foetal or embryonic tissue<sup>4</sup>. Teratomas are the second most common neoplasm in children following yolk sac tumour and occur with a relative frequency ranging from 13 to 19%<sup>5,6</sup>. Two distinctive groups of testicular teratomas occur according to age: pre and post-pubertal. Pure teratomas (nonmixed) are common in the paediatric sub-group, however these are rare in adults. A mixed variant neoplasm is more commonly seen in adults. Mature pre-pubertal teratomas are benign and represent approximately 30% of testicular germ cell tumours in children<sup>7</sup>. Post-pubertal (adult) testicular teratomas are malignant. Malignant testicular teratomas have a higher metastasis rate of 20% as opposed to their ovarian counterparts<sup>8</sup>. Pure teratoma in the testis is rare accounting for 4% of GCT in this organ compared to pure teratoma in 95% of GCTs found in the ovary<sup>9</sup>. As previously mentioned, teratomatous features are more commonly found in mixed GCTs in the testis, rather than pure teratoma, and are apparent in approximately 50% of these tumours<sup>9</sup>.

A comparison of mature prepubertal gonadal teratomas, in contrast to the situation with the postpubertal examples, shows striking similarities between those in the ovary and the testis. Prepubertal testicular teratomas represent approximately 30% of testicular germ cell tumors in children, are typically pure, often have organoid tissue arrangements, lack cytological atypia and widespread mitotic activity, are not associated with IGCNU,<sup>10</sup> and are clinically benign.<sup>11</sup> These features are all similar for mature ovarian teratomas. Germ cells in the seminiferous tubules adjacent to pediatric teratomas may appear somewhat atypical, with occasional cells showing nuclear enlargement or multinucleation. On gross examination, teratomas are often multinodular, and their cut surface varies from multicystic to solid. Nodules of translucent, white cartilage may be seen. The cysts may be filled with clear or mucoid fluid or keratinous material. Areas of immature tissue may have a fleshy, encephaloid character. The characterization of testicular teratomas as “mature” or “immature” has been removed from the most recent WHO classification. This is because immaturity in the epithelial or stromal components has been shown to have no prognostic significance, although it is likely that overgrowth of highly immature neuroepithelium, thereby constituting a primitive neuroectodermal tumor, does worsen the prognosis. On microscopic examination, pure “mature” teratomas in children, somewhat paradoxically, consist solely of

“mature” tissues. In postpubertal patients, there is frequent cytologic atypia of such tissues that reflects their malignant potential and development from IGCNU. glands lined by gastrointestinal or respiratory epithelium with muscular cuffs, squamous islands, transitional epithelium, neuroglia, pigmented retinal epithelium, and fibrous stroma. Bone, liver, pancreas, thyroid, prostate, meninges, kidney, and choroid plexus are uncommon. Sometimes the glands are architecturally complex.. A granulomatous reaction to extravasated keratin is common<sup>12</sup>.

Yolk sac tumor has also been known over the years as endodermal sinus tumor, juvenile embryonal carcinoma, embryonal adenocarcinoma, distinctive adenocarcinoma of the infant testis, testicular adenocarcinoma with clear cells, and orchioblastoma<sup>13,14,15,16,17,18</sup> Current evidence has conclusively proved Teilum's postulate that yolk sac tumor is a unilaterally developed teratoma mimicking embryonal yolk sac tissue.<sup>19</sup> . yolk sac tumor of infancy has a soft consistency and a microcystic appearance on cross section Microscopically, the yolk sac component is recognized by the intermingling of epithelial and mesenchymal elements in a characteristic organoid fashion. Microcystic, glandular–alveolar, and papillary formations are common. Many of the cystic spaces are lined by a very flattened, endothelium-like layer of cells. Perivascular Schiller–Duval bodies are the most distinctive features of yolk sac tumor .Hyaline intracytoplasmic and extracytoplasmic round inclusions are consistently seen in yolk sac tumors .They are eosinophilic, periodic acid–Schiff (PAS) positive, and diastase resistant; some have been shown by immunocytochemistry to contain AFP. Others have been shown to be composed of other plasma proteins (such as albumin, a<sub>1</sub>-antitrypsin, and transferrin) and of basal lamina material<sup>20</sup>.

## V. CONCLUSION

The mixed germ cell tumour of testis especially mature teratoma with yolk sac tumour in an infant is a very rare testicular malignancy. Histopathological examination with immunohistochemistry by positivity with AFP and SAAL4+ and Negative with OCT3/4 in Yolk Sac tumour and serum AFP levels remain to be gold standard in diagnosis of the same.

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