

## “STUMP” of broad ligament: A rare entity with review of literature

Dear Editor,

Primary tumors of broad ligament are rare. Epithelial tumors and mesenchymal tumors are known to occur in the broad ligament. Leiomyoma is the most common mesenchymal broad ligament tumor.<sup>[1]</sup> A smooth muscle tumor of unknown or undetermined malignant potential (STUMP) is known to occur in uterus. We report a case of mesenchymal tumor revealing features of STUMP. Broad ligament tumors pose specific diagnostic difficulties because of their rarity causing an error in final diagnosis and therefore management.

A 45-year old para 3, living 3 presented with history of pain in lower abdomen for the past 1 month. There was no history of weight loss, anorexia or fever. Her menstrual cycle was normal. Ultrasonography showed a left tubo-ovarian mass. A possibility of left ovarian tumor was kept and exploratory lapromatotomy was done. Operative findings revealed a normal sized uterus with intact serosa, left-sided par-ovarian mass measuring 12 × 12 cm with an intact capsule; no papillae were seen on the outer surface. Both the ovaries were of normal size and the mass was easily separable from the left ovary. The omentum was grossly normal. Total hysterectomy with bilateral salpingo-oophorectomy was done. The specimen was sent for histopathological examination. Grossly, the uterus with cervix measured 7.5 × 5 × 3 cm. The endometrium measured 2 mm in thickness and myometrium measured 2 cm in thickness. The cut surface of the myometrium was studded with multiple intra-mural fibroids all measuring less than 1 cm. The cervix was normal. The right fallopian tube and ovary were within normal limits. The left fallopian tube measured 5.5 × 0.5 cm and the left ovary measured 3.5 × 1.5 × 0.5 cm. A mass measuring 12 × 12 cm was attached to the left broad ligament [Figure 1]. The outer surface was capsulated, smooth with dilated prominent blood vessels. The cut surface was solid, gray-white had whorled appearance with foci of hemorrhage at one end [Figure 2]. Representative sections were taken. Microscopic examination revealed proliferative endometrium, multiple leiomyoma in the myometrium and chronic non-specific cervicitis. Bilateral fallopian tubes and ovaries were normal histologically. The mass in the left broad ligament revealed a cellular tumor composed of spindle shaped smooth muscle cells without atypical features arranged in fascicles and bundles. Extravasated RBCs were present in between the smooth muscle fibers. Nuclei of smooth muscle cells were elongated, had blunt ends, finely dispersed chromatin and small nucleoli. Mitotic figures were typical and the count was less than 10 per 10 high power fields

in most mitotically active fields. A distinct and well demarcated zone of coagulative necrosis was present adjacent to the cellular zone of smooth muscles. There was an abrupt transition from the viable tumor to the necrotic tumor and ghost outlines were appreciated in the necrotic zone [Figure 3]. Keeping in view the extensive zone of coagulative necrosis, cellular nature of the smooth muscle tumor and lack of atypia, a diagnosis of the smooth muscle tumor of unknown or undetermined malignant potential (STUMP) of the left broad ligament was given.

### Discussion

Epithelial tumors are the most common tumors of broad ligament.<sup>[2]</sup> Mesenchymal tumors are rare. The most common mesenchymal solid tumor of the broad ligament is a leiomyoma.<sup>[1]</sup> Leiomyoma arises from any tissue which contains smooth muscles but most commonly from the uterus.<sup>[3]</sup> Extra-uterine leiomyomas are rare. Among the extra-uterine leiomyomas broad ligament leiomyomas are the most common to occur although their overall incidence is low.<sup>[4]</sup> Broad ligament fibroids are of two types—true and false broad ligament fibroids. True broad ligament fibroids spring from the muscle fibers normally found in the mesometrium. False broad ligament fibroids originate mostly from the lateral walls of the uterus or cervix.<sup>[5]</sup> Broad ligament leiomyomas with neurilemoma like pattern<sup>[6]</sup> and with degenerative changes<sup>[7,8]</sup> are reported in the literature. Primary leiomyosarcoma of broad ligament is very rare with only few cases reported in medical literature. Duhan *et al.* reported a case of leiomyosarcoma in a 45-year-old woman 4 years after hysterectomy.<sup>[9]</sup> Ewing sarcoma has also been reported in the literature.<sup>[10,11]</sup> Broad ligament can be a rare site of the extra-ovarian steroid producing tumor.<sup>[12]</sup>

To our knowledge, this is the first case of smooth muscle tumor of unknown or undetermined malignant potential (STUMP) of broad ligament. The term STUMP was introduced by Richard Kempson *et al.* in 1970 for uterine mesenchymal tumors.<sup>[13]</sup> The criteria used for



Figure 1: A mass measuring 12 × 12 cm attached to the left broad ligament



**Figure 2:** Cut surface of the mass is solid gray-white, has whorled appearance with few foci of hemorrhage

diagnosis of STUMP was the presence of coagulative necrosis, low mitotic count (less than or equal to 10 per 10 high power fields) and absence of atypia (A) or mitotic count more than 10 per 10 high power fields, focal mild to moderate atypia in the absence of coagulative necrosis (B) or mitotic count equal to or less than 10 per 10 high power fields, focal moderate to severe atypia in the absence of coagulative necrosis (C). The coagulative necrosis has to be differentiated from hyaline necrosis in which an intervening zone of collagen or granulation tissue is present between viable and non-viable tissue and the outlines of cells are not preserved. In coagulative necrosis there is abrupt transition from viable to non-viable tissue and outlines of cells are preserved. The STUMP belonging to the A category is the one most likely to behave in a malignant fashion according to Kempson's scheme.<sup>[14]</sup> The term STUMP is retained because it best expresses the fact that in some smooth muscle tumors, uterine or extra-uterine it is simply impossible to predict their behavior with certainty.

The broad ligament tumor in our case belonged to category A with higher chances of metastases. We report this case because of its rarity and to emphasize that STUMP can occur at extra-uterine sites also which has been described only in uterine tumors till date.

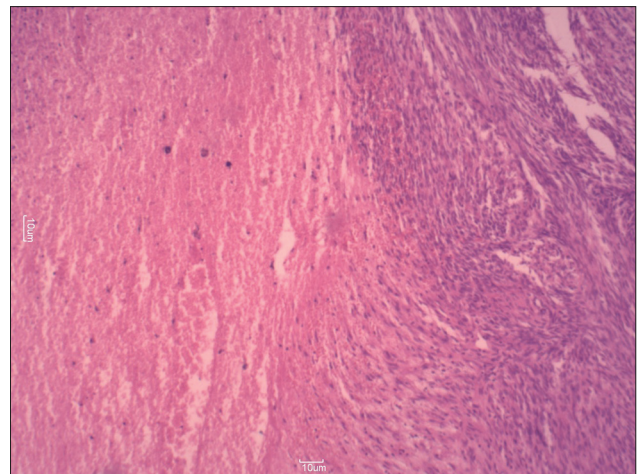
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**Figure 3:** An abrupt transition from the cellular smooth muscle cells zone to the zone of coagulative necrosis. Outline of some cells is preserved. (H and E, x40)

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10.4103/2278-330X.114101