

# Ossification In Uterine Leiomyomas

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## Abstract

Ossification in uterine leiomyoma is exceedingly rare and is an example of heterotopic bone formation. This generally occurs in long-standing leiomyomas with other degenerative changes like hyalinization and calcification. In our study of 900 cases the most common degenerative change seen was hyaline degeneration (70%) and only 5 cases (0.55%) showed changes of ossification. This secondary change of ossification could be due to ignorance of the patients with late reporting to the gynaecologist in the Indian subcontinent.

## INTRODUCTION

Ossification is an exceedingly rare degenerative change in the uterine leiomyomas. Leiomyomas can undergo various secondary changes including hyaline degeneration, cystic change, myxoid degeneration, infection, necrosis, calcification and rarely ossification. Most of these changes result from inadequate blood supply resulting in replacement of muscle fibres by hyaline material, collagen, calcium, mucopolysaccharides or a combination of these.<sup>1,2,3</sup> There are very few references regarding ossification of leiomyomas in the English literature. We present 5 cases of uterine leiomyoma with secondary changes of ossification which we came across during routine histopathological examination of hysterectomy specimens.

## PATIENTS AND METHODS

The study was conducted on 900 diagnosed cases of leiomyomas retrieved from the files of Department of Pathology, Govt. Medical College, Chandigarh between January 1995 to June 2000. Sections were stained with routine H&E stain and were examined for secondary changes. Relevant clinical details including chief complaints, duration, and USG diagnosis were also noted.

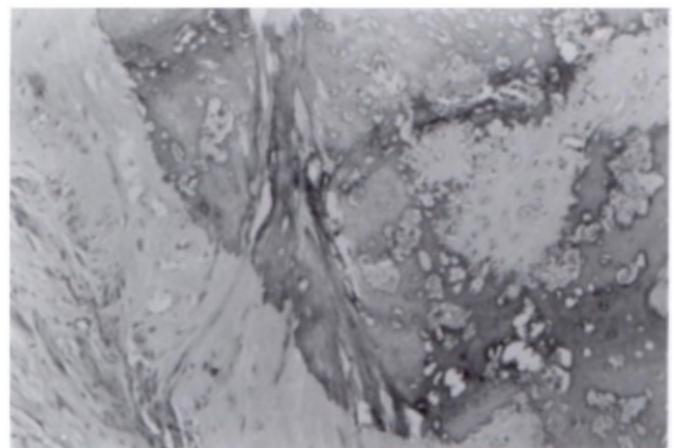
## RESULTS

Out of 900 cases of leiomyoma diagnosed on hysterectomy specimens, only 5 cases showed secondary changes of ossification. The age of patients ranged from 34 to 68 years. Out of 5 cases, 4 were postmenopausal while 1 was premenopausal. Only 1 out of 5 patient was nulliparous. The duration of signs and symptoms ranged from 2 months to 1 ½ years. Size of the tumour varied from 0.8 cm to 8 cm in

diameter. Microscopic examination revealed leiomyoma with secondary changes of ossification associated with hyalinization in 3 cases while it was seen along with calcification in 2 cases (Fig.1,2). Hyalinization alone however, was the most commonly observed secondary change in leiomyoma, seen in 70% cases. One of the patients who was nulliparous had also papillary serous cystadenocarcinoma in right ovary (Table).

## Figure 3

Figure 2: Photomicrograph showing osseous metaplasia in leiomyoma



(H&E x 200).

**Figure 2**

S. No	Age	Parity	Chief Complaints	Duration	USG Diagnosis
1.	58	Nulliparous	Uterine bleeding, pain, Heaviness lower abdomen	1 ½ years	Right ovarian cyst with subserosal fibroids.
2.	50	Multiparous	Something coming out of vagina.	1 year	Intramural fibroid
3.	68	Multiparous	Postmenopausal intrauterine bleeding	2 months	Intramural fibroids
4.	48	Multiparous	Pain, lump lower abdomen	1 year	Multiple intramural fibroids
5.	38	Multiparous	Irregular intrauterine bleeding	9 months	Intramural fibroid

**Figure 4**

Table 1: Clinicopathological changes in cases of Uterine Leiomyomas with Ossification

S. No	Gross Examination	Microscopic Diagnosis
1.	Right ovarian cyst-23cm diameter with a solid greywhite area, 2 subserosal fibroids 1.1 and 0.8cm diameter.	Right ovarian cyst-Papillary cystadenocarcinoma. Uterine tumour-Leiomyomata with secondary changes of hyalinization and ossification.
2.	Intramural fibroid 1cm diameter.	Leiomyoma with areas of calcification and ossification.
3.	Intramural fibroids 1.2 and 0.8cm diameter.	Leiomyomata with secondary changes of calcification and ossification.
4.	Multiple intramural fibroids, largest 7.5cm diameter.	Leiomyomata with changes of hyalinization and osseous metaplasia.
5.	Intramural fibroid 8cm diameter.	Leiomyoma with hyaline degeneration and foci of osseous metaplasia.

(H&E x 100)

{image:4}

**DISCUSSION**

Leiomyomas are more commonly seen in premenopausal, multiparous black females. The reason for the frequent development of leiomyoma in the uterus is suspected to be hormonal influence, especially oestrogen, growth hormone

and progesterone. Leiomyomas are known to regress after menopause. These are well circumscribed, solid, white with whorled appearance. A variety of degenerative changes can take place in leiomyomas which may be due to inadequate blood supply. The degree and rapidity of vascular insufficiency decide the type of degenerative change. The types of degeneration include hyaline, myxoid, mucinous, cystic, haemorrhagic, calcification and rarely ossification.<sup>1,2</sup>

Ossification in uterine leiomyoma is an example of heterotopic bone formation which is generally of membranous type. Frank osteoid material may be found as a sequele to an old missed abortion, ensuing upon dystrophic calcification or as a metaplastic phenomenon. Secondary change of ossification is generally present in the long-standing leiomyomas with other degenerative changes like hyalinization and calcification. Calcification is a process of deposition of calcium in the tissue in the form of carbonate and phosphate while ossification is a process of differentiation of connective tissue alongwith presence of collagen fibres blended with mucopolysaccharides and enclosing living cells. The mere presence of calcium salt in inducing ossification is not sufficient but presence of proliferating mesenchymal cells capable of metaplasia are equally essential.<sup>1,4,5,6</sup>

In a study from West Indies common degenerative changes seen in leiomyoma were hyaline change (63%), myxomatous change (13%), calcification (8%), cystic (4%), fatty change (3%), and sarcomatous change (0.7%). None of the cases showed changes of ossification.<sup>2</sup> In our study of 900 cases the most common degenerative change seen was hyaline degeneration. Only 5 cases (0.55%) showed changes of ossification which were associated with other degenerative changes like hyalinization and calcification indicating a gradual transformation of degeneration from one stage to another. This secondary change of ossification in postmenopausal females could be due to ignorance of a patient with late reporting to the gynaecologist in the Indian subcontinent.

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