(International Print/Online Journal)

SJIF IMPACT FACTOR: 6.829
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 9, Issue 3, Page No: 569-572
May-June 2026

IJMSCR

From Smooth Muscle to Bone: A Case Series of Leiomyoma with Osseous Metaplasia

Dr. Jane Betsy Isaac[1], Dr. V S Pavithra[2], Dr. Vindu Srivastava[3], Dr. Pooja E Moorthy[4]
[1-4]Department of Pathology, Chettinad Hospital and Research Institute, Chettinad Academy of Research and Education, Kelambakkam, Chengalpattu, Tamil Nadu, India

***Corresponding Author:**
Dr. Pooja E Moorthy
Department of Pathology, Chettinad Hospital and Research Institute, Chettinad Academy of Research and Education, Kelambakkam, Chengalpattu, Tamil Nadu, India

Type of Publication: Case Series
Conflicts of Interest: Nil

Abstract

This series contains 6 cases, where hysterectomy was performed for uterine fibroids. Out of the 6 cases, one case had a concurrent carcinoma of the endometrium. On gross examination, the fibroids had gritty white to yellow and bony hard areas. On histopathological examination ossification was found. Here, we present cases of leiomyoma with ossification due to its rarity and the need for it to be differentiated from heterotopic bone formation in malignant endometrial stromal tumour or malignant mixed mullerian tumor.

Keywords: Ossification, Leiomyoma, Degenerative change

Introduction

Leiomyomata are the most common uterine smooth muscle tumors which usually occur in the reproductive age. Leiomyoma commonly undergoes various degenerative changes includes hyalinization, myxoid degeneration, cystic change, infarction, calcification, lipomatous metaplasia and very rarely ossification. [1-7] Ossification in uterus as such is a very rare phenomenon. Osseous metaplasia of the endometrium has been reported,[8-10] however ossification in a leiomyoma has not been reported much.

Case Details

Case 1 was a 45 year old female who had lower abdominal pain for 6 months duration. Ultrasound abdomen revealed uterine fibroids. Total abdominal hysterectomy was done. Gross examination showed enlarged uterus with multiple intramural fibroids. Cut surface of fibroid was gritty with grey white with hard yellowish areas (figure 1 case 1).

Case 2 was a 51 year old female with polymenorrhagia for 8 months duration. Ultrasound showed multiple fibroids in the uterus. Total abdominal hysterectomy was done. Gross examination showed enlarged uterus with multiple intramural fibroids. Cut surface of fibroid was gritty with grey white with hard yellowish areas (figure 1 case 2).

Case 3 was a 62 year old female with third degree uterine prolapse. No radiological investigations were done. Vaginal hysterectomy was performed. Gross examination showed atrophic uterus with multiple subserosal fibroids along with a separately sent fibroid. Cut surface of separately sent fibroid showed grey white area with bony hard areas (figure 1 case 3, inset image shows separately sent fibroid).

Case 4 was a 47 year old female with an abdominal mass for 1 year duration. Ultrasound showed multiple fibroids in the uterus. Total abdominal hysterectomy was done. Gross examination showed an irregularly enlarged uterus with multiple intramural fibroids. The cut surface of the fibroid showed grey white whorled are along with bony hard areas (figure 1 case 4).

Case 5 was a 65 year old female with post-menopausal uterine bleeding for 3 months duration. Radiological investigations showed a thickened endometrium of 19mm along with fibroid in the uterus. Total

abdominal hysterectomy was done and gross examination revealed atrophic uterus with an irregular grey white growth occupying the endometrial cavity , the myometrium shows a fibroid cut surface revealed grey white area with hard areas (Figure 1 case 5, arrow indicates fibroid, arrowhead indicates the endometrial cavity).

Case 6 was a 45 year old female with abnormal uterine bleeding for 2 years duration. Ultrasound showed a large intramural fibroid. Total abdominal hysterectomy was done. Gross examination showed an enlarged uterus with a bony hard tumour. Cut surface appeared hard, brown to blackish appearance with white specks (figure 1 case 6)

Microscopy of cases 1-4 and 6 revealed a well circumscribed lesion composed of fascicles and whorls of spindle cells with cigar shaped nuclei with blunt ends with areas of hyalinization, calcification and mature bony trabeculae. (figure 2 cases 1-4, case 6) No atypical mitosis, pleomorphism or necrosis seen. A final diagnosis of leiomyomata uterus with hyalinization and ossification was given.

Microscopy of the 5th case showed a lesion composed of fascicles and whorls of spindle cells with cigar shaped nuclei with blunt ends with areas of hyalinization, calcification and mature bony trabeculae and an invasive tumour arising from the endometrium composed of atypical cells arranged in villoglandular pattern. The cells show marked nuclear pleomorphism, atypical mitosis. Thus it was concluded as endometrioid adenocarcinoma FIGO Grade I (Figure 1 case 5, inset image shows the adenocarcinoma).

Discussion

Leiomyomata uterus are the most common benign uterine smooth muscle tumours. Uterine leiomyomas are known to undergo various degenerative changes. The common degenerative changes include hyaline change, cystic degeneration, myxoid, hemorrhagic infarction and calcification. [1-4] Type of degeneration depends on the rapidity and duration of ischemia. Osseous degeneration in leiomyoma is very rare. It may be secondary to dystrophic calcification or a metaplastic phenomenon, wherein the ossification arises from pluripotent mesenchymal stem cells which can differentiate into cartilage or bone. The presence of spectrum of changes noted in our case like infarction, hyalinization, calcification and ossification supports ischemia which has led to gradual transformation of secondary degenerative changes. A study by H. Mohan et al in a series of 900 leiomyoma cases, [1] ossification was seen in 0.55% (5 cases). They also noted that the ossification was associated with other degenerative changes like hyalinization and calcification.

It is important to differentiate heterotopic bone formation from endometrial stromal tumor, heterotopic bony elements in malignant mixed mullarian tumor. One of our cases was associated with well differentiated endometrioid carcinoma, however it did not show any dedifferentiated areas. Both were seen as distinct lesions and did not cause any diagnostic confusion. Though endometrioid adenocarcinoma and leiomyoma are independant tumors, ossified leiomyoma with endometrial carcinoma has not been reported in the literature so far.

Osseous metaplasia in endometrium is known which usually occurs as a metaplastic change, represents a reactive process following chronic injury secondary to miscarriage or any instrumentation. [8-10] But heterotopic bone formation in myometrium is per se rare; it indicates degenerative change.

Here, we present these cases of leiomyoma with ossification, due to its rarity. It needs to be differentiated from heterotopic bone formation in malignant endometrial stromal tumour or malignant mixed mullerian tumor.

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Volume 9, Issue 3; May-June 2026; Page No 569-572

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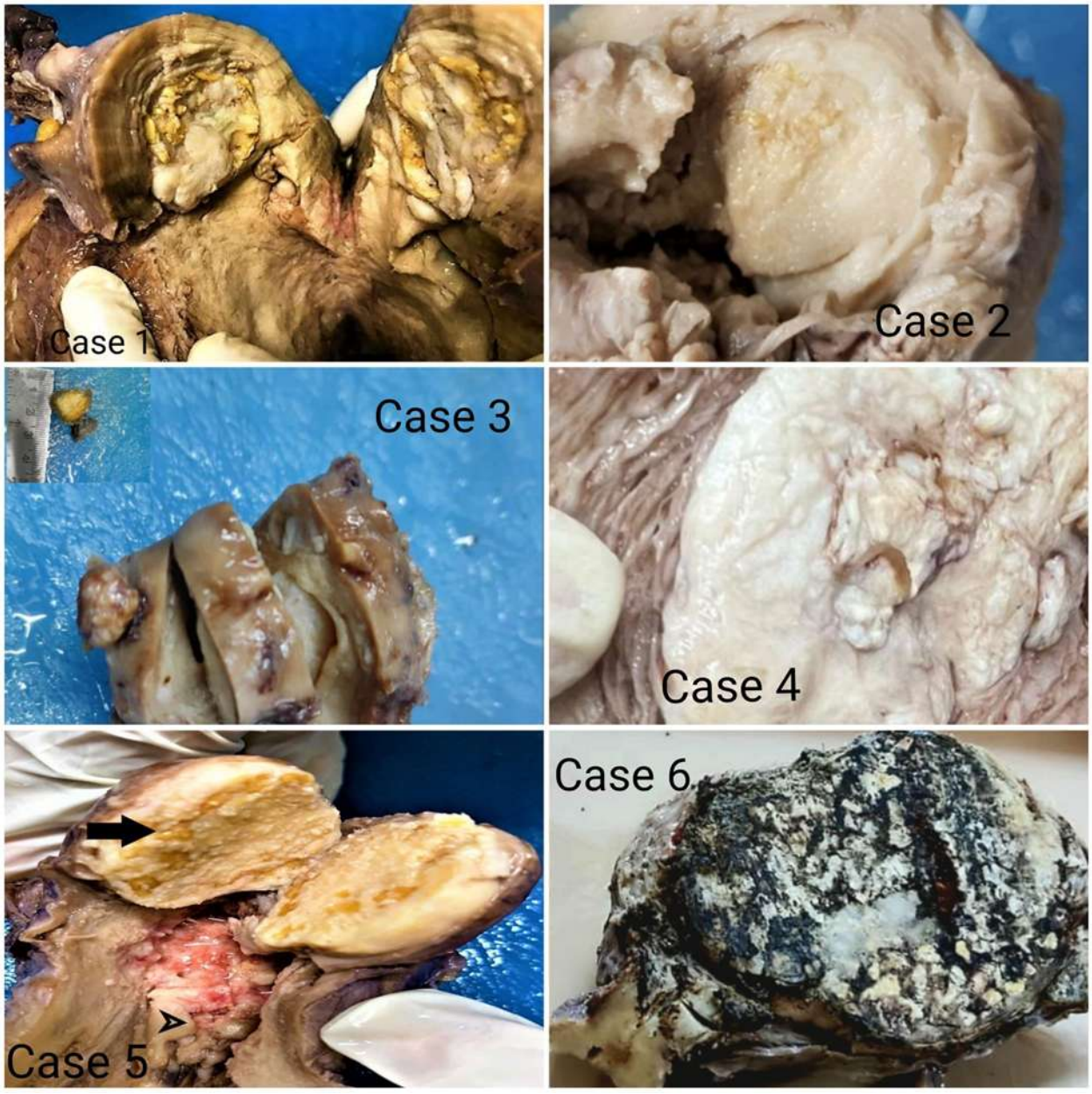
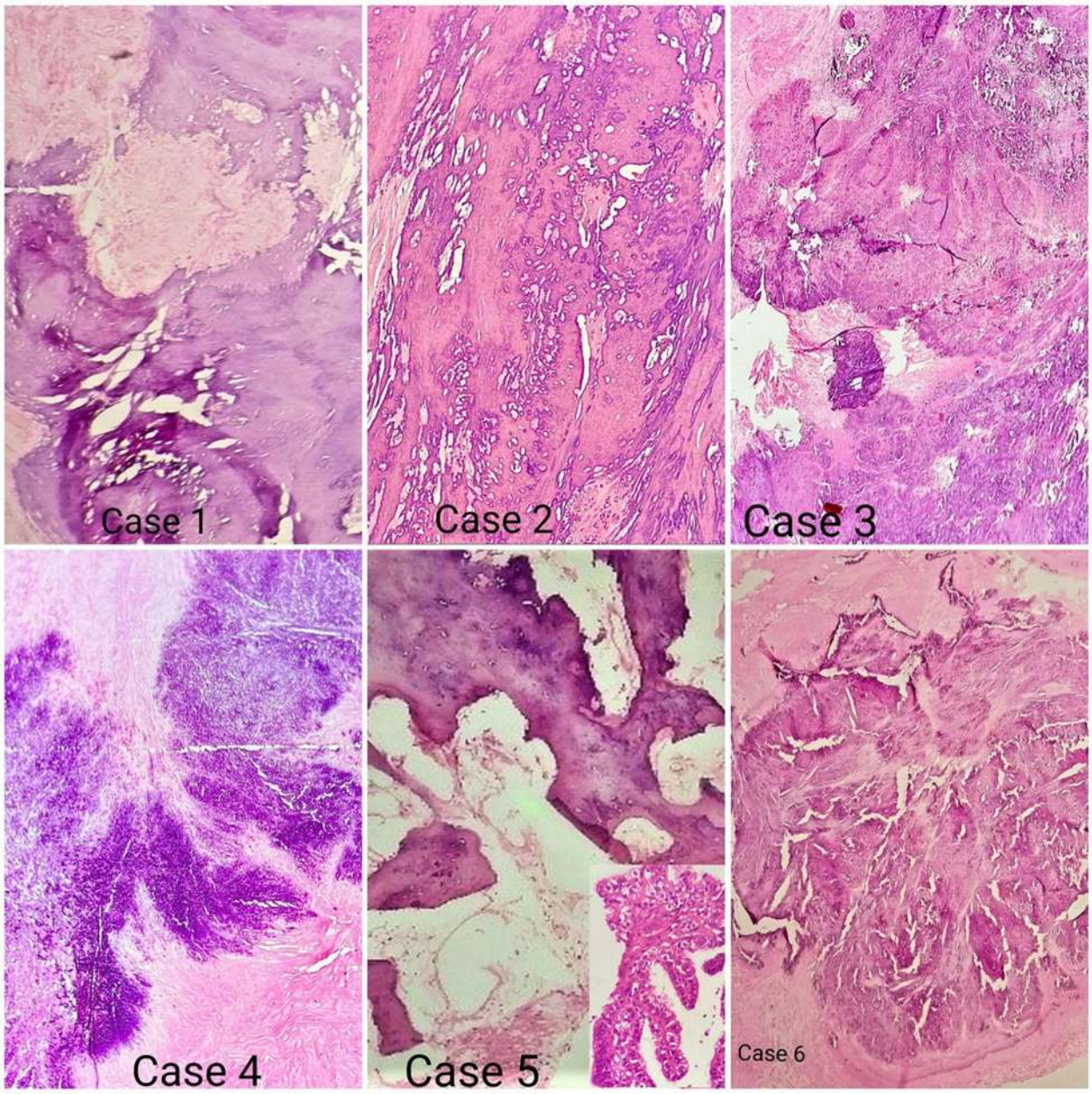
Figure 1



Volume 9, Issue 3; May-June 2026; Page No 569-572

Figure 2



Legends

Figure 1: Case 1-4 -Gross showing fibroid with hard white yellow areas, Case 5 -Gross showing fibroid with hard white yellow areas(solid black arrow) and growth in the endometrium (arrow head), Case 6 Sold, hard blackish area

Figure 2: Case 1- 4, 6: Hematoxylin and Eosin stained section showing leiomyoma with bony trabeculae and surrounding hyalinization. Case 5 inset image shows endometrioid adenocarcinoma.

Volume 9, Issue 3; May-June 2026; Page No 569-572