A Case Report and Review of the Literature on Uterine Fatty Tumours (UFT): A Field of Heterogeneous Data

Luca Bernardini1, A Zacutti1, N Gorji2, ML Giannoni1, Francesca Accorsi1 and E Volpi1

1Department of Obstetrics and Gynecology, Saint'Andrew Hospital, ASL 5, Via Vittorio Veneto 197, 19100, La Spezia, Italy
2S.C. Anatomia ed Istologia Patologica, Saint’Andrew Hospital, ASL 5, Via Vittorio Veneto 197, 19100, La Spezia, Italy

Abstract

A case of uterine fatty tumour of 2 cm studied by transvaginal ultrasound in a 67-year-old woman undergone totally laparoscopic hysterectomy is here presented along with an updated review of this kind of tumours. A total of 226 cases from 75 publications could be found. Traditional definitions of these tumours are here critically reconsidered. The terminology used to define these tumours is confusing and reflects main radiological and pathological points of view (uterine fatty tumours [UFT] vs. lipoma/ lipoleiomyoma). It is here stressed that these tumours by occurring in aged and overweight women are not so uncommon as generally believed, can be very well recognized, as far as they are small (< 4 cm), by transvaginal ultrasound while CT and MR become more specific for decision making in case of larger size tumours. Symptoms largely vary from none to sudden lump enlargement or bleeding or pain. An association with malignancy has been found in 10% suggesting a radical treatment (hysterectomy) in most cases.

Case Report

Since first description by Lobstein in 1816 until 1966 only 131 cases of lipomatous uterine tumours (UFT) were initially reported. From the 70s up to date this number has been progressively growing to at least 357 cases around the world. The first preoperative study on a case of uterine “fatty” tumour has been described by Jacobs and Markowitz in 1988 [1] and since then the preoperative imaging study of these tumours has significantly increased due to the expansion of the radiological technologies and diffusion of ultrasonography in routine gynaecologic activity. Uterine fatty tumours (UFT) or lipoleiomyomas (LLM) are a kind of leiomyomas with prevalent fatty component occurring mostly in peri-menopausal and post-menopausal obese women. Many clinical and pathological aspects of these uncommon uterine nodules have been already reported [2-6]. Nonetheless literature largely varies with a prevalence of radiological case-reports for clinical data and histo-pathological review analysis on pathogenesis investigation. Little or nothing about UFT is found in important gynaecological journals. Moreover it is not clear which diagnostic tool among ultrasound, CT and MR should be best utilized for clinical follow up of these nodules [7,8], whether hysterectomy should or not always warranted [9,10] and how frequently a malignant transformation of these tumours should also be expected [3,11]. We report here a single case of UFT along with a full literature review on this topic with the aim to help gynaecologists in the clinical counselling of these tumours.

A 67 year old woman with no clinical symptoms or relevant medical history (menopause at 54 y.o., hypercholesterolemia and overweight [BMI=28.9]) was found with a 1.9 cm hyper echoic uterine nodule on the intramural/subserosal margin of anterior wall. This little hyper echoic nodule was clearly distinguished from the surrounding myometrium without showing any posterior acoustic shadow. Contrary to that generally reported this lesion appeared not to be encased in hypo echoic ring (Figure 1). The discovery of this nodule was made occasionally during routine transvaginal ultrasound (US). Following CT and MR (images here not reproduced) a presumptive diagnosis of uterine fatty tumour was made and patient advised to undergo surgery. A totally laparoscopic hysterectomy with bilateral adnexectomy was performed and successfully the resulted histopathological analysis confirmed the benign nature of the lesion. Pathological findings: grossly, uterus weight of 76 grams and dimensions of 7 × 4 × 3 cm, at the cut surface with a yellowish intramural nodule of corpus uteri of 1.9 cm in diameter, with well-defined edges but non encapsulated; the overlying endometrium was atrophic and the cervix showed no significant macroscopic changes (Figure 2). Microscopically the tumour was predominantly made up of mature adipose tissue mingled with bundles of smooth muscle (positive for smooth muscle actin antibody at immunohistochemistry). The diagnosis of lipoleiomyoma was made. The patient gave her informed consent to the study.

Keywords: Uterine lipoma, Lipoleiomyoma, Uterine fatty tumors, Uterine myomas

Figure 1: TSV ultrasound showing a typical hyperechogenic intramural nodule of 2 cm.
Possibility to encounter everywhere around the uterus these tumours or subserosal location has been found in most cases despite the giant lipoleiomyoma, myolipoma of round ligament). An intramural bizarre epithelioid lipoleiomyoma and plexiform lipoleiomyoma, angiomyolipomas (n=4), and others (1 atypical lipoleiomyoma, 1 lipoleiomyomas (n=135), less frequently occurred lipomas, angiomylipomas (n=4), and others (1 atypical lipoleiomyoma, 1 bizarre epithelioid lipoleiomyoma and 1 plexiform lipoleiomyoma, 1 giant lipoleiomyoma, 1 myolipoma of round ligament). An intramural or subserosal location has been found in most cases despite the possibility to encounter everywhere around the uterus these tumours (round ligament, cervix, or as pelvic mass). Satellite fibroid tumours or leiomyomas were described in 33% of the cases. Notably, in 4/18 lipomas a concomitant presence of an endometrial cancer was discovered. To the date, liposarcomas and lipoleiomyosarcomas have been found to be described in at least 8 independent studies for a total of 19 patients.

**Discussion**

In the last months the number of publications on UFT has grown a lot with increasing online diffusion of radiological images [12-14]. In these imaging reports, lipoleiomyomas are defined as uncommon, benign tumours not requiring surgical treatment. Most data on these tumours have been published on radiology medicine journals or reviews of pathology archives. Little is given on gynaecological journals. This is of matter since for gynaecologists it would be of value a prompt recognition and counselling of these tumours when performing ultrasound. This is truer in case of overweight peri-menopausal women who have fibroids in almost 80% of the cases [15]. Since the incidence of UFT in older patients is higher than 1% it is questionable to consider UFT as uncommon tumours as yet. Particularly, when the aging trend of the world population is considered. As far as it refers to clinical management a dramatic variability is from one study to another. This is a consequence of the variability of the tumour size, presence or not of symptoms and interpretation of imaging investigation results. As originally reported by Pham et al [16] and others [17,18] when these fatty tumours are small (2-5 cm) and of certain uterine origin, transvagal ultrasound is very sensitive and there is no need of additional and more specific technologies (CT and MR). Since correct diagnosis can only be expressed after histologic examination and malignancy be found, we believe that in general hysterectomy should be always done. Myomectomy could be an option only for younger patients scheduled to special infertility cures (i.e. oocyte donation cycles). The review of literature data shows that the percentage of UFT occurring in women < 54 years is not insignificant (23%) (3). A conservative management is mandatory in conditions contraindicating surgery when surveillance by means of ultrasonography, CT, and MR is rather coupled to uterine artery embolization [19,15]. When clinical manifestations such as sudden lump enlargement or pelvic masses are present, the implementation of additional and more specific technologies (CT and MR) becomes mandatory. Despite the very high specificity of MRI for detecting origin and mass constitution (fat tissue), the diagnosis is made only after excluding other pelvic masses (benign cystic ovarian teratoma, malignant degeneration of cystic teratoma, lipomatous ovarian tumour, pelvic lipoma, liposarcoma and lipoblastic lymphadenopathy) [9,10,20,21]. CT and MR have allowed valid follow up of pelvic masses in one patient with severe medical contraindication to surgery [7] but pitfalls in imaging interpretation may always happen and one case with fatal consequences due to unnecessary surgery (lipoleiomyoma misdiagnosed as liposarcoma - patient died post hysterectomy) has been reported [22]. Although most fibroids regress after the menopause the UFT are more frequent in elderly women. It has been estimated that the prevalence of uterine lipoleiomyoma in patients older than 80 years is close to 10% (5/50 uterine lipoleiomyomas) [3] and it is well known that elderly women have a higher risk of perioperative morbidity and mortality. Therefore sometime correct counselling of these lesions is not easy in particular considering the finding of an association with sarcomas and endometrial cancers in 10% of the cases. Literature description of the lipomatous uterine tumours is highly variable as much as it is the biology of these tumours, the histotype and also the criteria used.
| No. of cases | Size | Age | Symptoms          | US (TA + TSV) | CT | MR | Surg. | Histology         | Fibroids | References                      |
|-------------|------|-----|-------------------|---------------|----|----|-------|-------------------|----------|---------------------------------|
| 2           | 7 cm |      | Abdominal pain    | TA yes        | yes| yes| Lipoma no |                  |          | Bachor, Baczako. Geburtshife   |
|             |      |      | lump growth       | yes no        | yes| yes| Lipoma no |                  |          | Frauenheilkld 46,842-3, 1986   |
| 1           | 2 cm | 5 cm| Asymptomatic      | TA yes        | no | yes| Lipoma no |                  |          | Jacobs and Markowitz. AJR:150, |
|             |      |      |                   | yes yes       | yes| yes| Lipoleiomyoma no |          | 1335-1336, 1988                |
| 2           |      |     |                   | TA yes        | yes| yes| Lipoleiomyoma no |          | Dodd III and Budzik. AJR:155, |
|             |      |     |                   | TA yes        | yes| yes| Lipoleiomyoma no |          | 317-322,1990                  |
| 1           |     |     |                   | yes yes       | yes| yes| Lipoleiomyoma no |                  | Azzenstein et al. Gynecol Onco |
|             |      |     |                   | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | 40;274-6, 1991                 |
| 1           | TA  |     |                   | yes no        | no | no | Lipoleiomyoma no |                  | Ekici, Vidian. Int J Gynaecol |
|             |     |     |                   | no            |    |    |                  |                  | Obstet:42;167-71, 1993        |
| 1           | 9 cm| 59  | Abnormal liver     | TA yes        | yes| yes| Lipoleiomyoma yes |                  | Villanueva et al. Abdom Imaging: |
|             |      |      | enzymes           | yes yes yes   | yes| yes| Lipoleiomyoma yes |                  | 18;402-3, 1993                 |
| 1           | TA  |     |                   | no            |    |    |                  |                  | Pham et al. Can Assoc Radiol: |
|             |     |     |                   |               |    |    |                  |                  | 44;463-5, 1993                 |
| 1           |     | 44  | Asymptomatic      | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | Sonobe et al. Virchows Arch: |
|             |      |      |                   | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | 427;455-458, 1995              |
| 1           |     |     |                   | yes yes       | yes| yes| Lipoleiomyoma no |                  | Alonso et al. Ginecol Obstet:|
|             |      |     |                   | yes yes       | yes| yes| Lipoleiomyoma no |                  | 63;30-2, 1995                  |
| 11          | TA (n=5)|     | Abdominal liver     | no            | no | yes| Lipoleiomyoma yes |                  | Serafini et al. J Ultrasound |
|             | TSV (n=6) |     | enzymes           | no            | no | yes| Lipoleiomyoma yes |                  | Med:15;195-99, 1996            |
| 1           | 8 cm| 73  | Pelvic Mass        | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | Tsushima et al. British J Rad: |
|             |      |      |                   | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | 70;1068-1070, 1997             |
| 1           | 62  |     | Cholelithiasis     | yes yes yes   | yes| yes| Lipoleiomyoma yes |                  | Prieto et al. Abdom Imaging: |
|             |      |      |                   | yes yes yes   | yes| yes| Lipoleiomyoma yes |                  | 23;214-216, 1998               |
| 2           | 6.8 cm| 55  | Asymptomatic       | TA yes        | yes| yes| Lipoleiomyoma yes | yes yes yes       | Su et al. Eur J Gynaecol Onco |
|             | 5.5 cm| 62  | Bleeding           | TA yes        | yes| yes| Lipoleiomyoma yes |                  | 22;439-40, 2001                |
| 1           |     |     |                   | yes yes yes   | yes| yes| Lipoleiomyoma yes |                  | Avritsher et al. AJR:177;856- |
|             | Large tumor |     | Abdominal pain     | yes yes       | yes| yes| Lipoleiomyoma no |                  | 857, 2001                      |
| 1           | 5 cm| 48  | Pelvic pain        | TA yes        | yes| yes| Biopsy Lipoleiomyoma no |                  | Arritsher et al. AJR:177;856- |
|             |     |     |                   | yes no        | no | no | Lipoleiomyoma no |                  | 857, 2001                      |
| 1           | 51  |     | Bleeding           | TSV no        | no | no | Angiolipoma no |                  | Braun et al. 2002              |
| 1           | 5.5 cm| 67 | Low Haematocrit    | TSV yes       | no | no | UFT° yes        |                  | Chan et al. JIHK Coll Radiol:6; |
|             | Warfarin therapy |     | Abdominal pain     | yes yes       | yes| yes| Lipoleiomyoma no |                  | 30-32, 2003                    |
| 1           | 67  |     |                   | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | Al-Maghrabi et al. Saudi Med J: |
|             | Abdominal pain |     |                  | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | 25;1492-4, 2004                |
| 1           | 10 cm| 65 | Pelvic mass        | TA yes        | yes| yes| Lipoleiomyoma no |                  | Chawla et al. Applied Radiology |
|             |      |     |                   | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | Online 38-40, April 2004       |
| 1           | 7.8 cm| 62 | Bleeding           | TA yes no no   | yes| yes| Lipoleiomyoma yes |                  | Lau and Thoenni. British J Rad: |
|             |      |     |                   | yes yes yes   | yes| yes| Lipoleiomyoma yes |                  | 78;72-74, 2005                 |
| 1           | 7 cm| 75  | Abdominal pelvic   | TSV yes        | yes| yes| Lipoma yes |                  | Courbaras et al. Abdom Imaging: |
|             | pain |      | pain              | yes yes yes   | yes| yes| Lipoma yes |                  | 30;239-241, 2005               |
| 1           |     |     |                   | TA yes        | yes| yes| Lipoma yes |                  | Harish et al. Indian J Pathol |
|             |     |     |                   | Lipoma yes |    |    |                  |                  | Microbiol:48;377-8,2005        |
| 1           | 5 cm| 53  | Bleeding and pain  | TSV no no yes  | yes| yes| Lipoleiomyoma yes |                  | Alper et al. Malta Medical J: |
|             |     |     |                   | yes yes yes   | yes| yes| Lipoleiomyoma yes |                  | 17;40-41, 2005                 |
| 1           | 5 cm| 65  | Bleeding and      | TSV no no yes  | yes| yes| Lipoma no |                  | Deb et al. MJAFI:61;385-386, |
|             | abdominal lump growth | |       | yes no yes       | yes| yes| Lipoleiomyoma yes |                  | 2005                          |
| 1           | 12 cm| 72 | Pelvic mass        | TA yes no      | yes| yes| Lipoleiomyoma no |                  | Arikawa et al. Kurume Med J: |
|             |     |     |                   | yes yes yes   | yes| yes| Lipoleiomyoma no |                  | 53;37-40, 2006                 |
| 1           | 17 cm| 52 | Pelvic mass        | TSV yes yes yes | yes| yes| Lipoma no |                  | Fujimoto et al. J Obstet      |
|             |     |     |                   | yes yes yes   | yes| yes| Lipoma no |                  | Gynaecol:32;520-523,2006      |
| 1           | 12 cm| 60 | Pelvic mass        | TSV yes yes yes | yes| yes| Lipoma yes |                  | Fernandes et al. Indian J Pathol |
|             |     |     |                   | yes yes yes   | yes| yes| Lipoma yes |                  | Microbiol:50;800-1, 2007      |

Table 1 continued.
| No. | Size (cm) | Asymptomatic | Abdominal pain | Bleeding | Dysuria | Anaemia | CT | TVS | Lipoleiomyoma | Lipoma + ovarian thecoma | Pelvic mass | Uterine prolapse | Abdominal pain and bleeding | UFT° | UFT° | UFT° | UFT° | UFT° | UFT° | UFT° |
|-----|-----------|--------------|----------------|----------|---------|---------|----|-----|--------------|--------------------------|------------|-----------------|-----------------------------|-------|-------|-------|-------|-------|-------|-------|
| 1   | 11 cm     | no           | yes            | yes      | no      | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 18 cm     | yes          | yes            | yes      | yes     | no      | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 55 cm     | no           | no             | no       | yes     | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 2 cm      | yes          | yes            | yes      | no      | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 5 cm      | no           | no             | no       | yes     | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 58 cm     | yes          | yes            | yes      | no      | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 4.8 cm    | no           | yes            | yes      | no      | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 3.5 cm    | no           | no             | yes      | yes     | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 6 cm      | no           | no             | no       | yes     | yes     | no | no  | Lipoleiomyoma | (calcified)               |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 14 cm     | yes          | yes            | yes      | no      | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 6 cm      | no           | no             | no       | yes     | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 9 cm      | no           | no             | no       | yes     | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 3   | 2.4 cm    | yes          | yes            | yes      | no      | yes     | no | no  | UFT°          | UFT°                     |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 3 cm      | no           | yes            | yes      | no      | yes     | no | no  | UFT°          | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 2   | 9 cm      | no           | no             | no       | yes     | yes     | no | no  | Lipoleiomyoma | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 1   | 2 cm      | yes          | yes            | yes      | no      | yes     | no | no  | UFT°          | no                       |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |
| 70^a| 7.7^a     | 57^a         |                 |          |         |         | no | no  |                |                          |            |                 | Abdominal pain and bleeding |       |       |       |       |       |       |       |

Table 1: Clinical case reports.
Table 2: Pathology review studies.

| No. of cases | Age | Size | Symptoms                  | Histology         | Fibroids | Incidence | Study period | References                                      |
|--------------|-----|------|---------------------------|-------------------|----------|-----------|--------------|------------------------------------------------|
| 4 + 21 cases | 56  | 8 cm | Bleeding                  | Lipoleiomyoma     | no       | no        | 1965-1976    | Willen et al. Virch Arch A Path Anat Histol:377;351-361, 1978 |
| 47           |     | 8 cm | Abdominal Pain            | Lipoleiomyoma     | no       | yes       | 1979-1982    | Pounder. J Clin Pathol:35;1380-1383, 1982          |
| 64           | 18 cm | Asymptomatic | Bleeding | Lipoma        | yes       | no        | 1979-1982    | Pounder. J Clin Pathol:35;1380-1383, 1982          |
| 61           | 7 cm | 7 cm* | Bleeding                  | Lipoleiomyoma     | yes       | no        | 1979-1982    | Pounder. J Clin Pathol:35;1380-1383, 1982          |
| 62           | 7 cm* |     |                           |                   |          |           |             |                                                 |
| 3            | 83          | 20 cm | Enlarged abdomen          | Lipoleiomyoma     | yes       | 3/54000 (0.005%) | 1979-1982    | Havel et al. Virch Arch B Cell Path:57;77-79, 1989 |
| 80           | 2.5 cm      |     | Asymptomatic              | Lipoleiomyoma     | yes       |           |             |                                                 |
| 73           | 2 cm        |     | Bleeding                  | Lipoleiomyoma     | yes       |           |             |                                                 |
| 1            | 55          |     | Cholecystic pain          | Atypical lipoleiomyoma | yes       |           |             | Lin and Hanai. Pathol International: 41; 164-169. 1991 |
| 1            |           |     | Translocation             | Chromos 12        | yes       |           |             | Brooks et al. Int J Gynecol Path:11;144-9, 1992 |
| 10           |           |     | Bizarre epitheliod        | Lipoleiomyoma     | yes       |           |             | Resta et al. Pathol Res Pract:190;378-83, 1994   |
| 5            | 78          | 5.3 cm | 1 angiomyolipoma           | Lipoleiomyoma     | yes       | 3/54000 (0.005%) | 1979-1982    | Shintaku. Pathol Int:46; 498-502, 1996            |
| 67           | 7 cm        |     | 4 lipoleiomyoma           |                   |          |           |             |                                                 |
| 73           | 3.5 cm      |     | 1 lipoma                  |                   |          |           |             |                                                 |
| 74           | 3.6 cm      |     |                           |                   |          |           |             |                                                 |
| 60           |           |     |                           |                   |          |           |             |                                                 |
| 1            |           |     | Lipoleiomyoma             |                   |          |           |             |                                                 |
| 1            |           |     | Lipoleiomyoma             |                   | 0.8%     |           |             | Gentile et al. Pathologica:88;132-4, 1996         |
| 1            |           |     | Lipoleiomyoma             |                   | 0.28% (fibroids) | 0.39% (hysterectomies) | Dellachá et al. Pathologica:89;737-41, 1997 |
| 17           | 45-74       | 6/17 angiomyolipomas      | 10/17             | 10/17    | 0.35%     | 1983-2003    | Lin et al. Int J Gynaecol Obstet:67;47-9, 1999 |
| 1            | 57          | 11 cm | Bleeding                  | Plexiform lipoleiomyoma | yes       |           |             | Morelli et al. Arch Gynecol Obst:27:4;17-118, 2006 |
| 50           | 54*         | 4.6* cm | Lipoleiomyoma             |                   | 2.1%     |           | 1998-2004    | Wang et al. Int J Gynecol Pathol:25;239-42, 2006  |
| 3            |           |     | Lipoleiomyoma             |                   |          |           |             | Kondi-Pafiti et al. Eur J Gynaecol Oncol:27;73-7, 2006 |
| 10           | 53*         | 4.75* cm | Pain, Bleeding           | Lipoleiomyoma     | 1.4%     |           | 1999-2007    | Bolat et al. Turkish J Pathol: 23: 82-86, 2007    |
| 2            | 47          | 9 cm  | Bleeding                  | Lipoleiomyoma     | no       |           |             | Terada T. Appl Immunohistochem Mol Morphol: Epub Jan 26, 2012 |
| 66           | 30 cm       |     | Giant lipoleiomyoma       |                   | no       |           |             |                                                 |
| 132^          | 65^         | 9.6* |                          |                   |          |           |             |                                                 |

^ Total n of cases  * mean values
to study their incidence [23,24]. Despite all the UFT appear similar (with a bright yellow colour and soft tissue consistency) they show, after microscopy, different histological constitution. The high range of histopathological appearance has caused a proliferation of synonyms after microscopy, different histological constitution. The high range of (with a bright yellow colour and soft tissue consistency) they show, after microscopy, different histological constitution. The high range of histopathological appearance has caused a proliferation of synonyms after microscopy, different histological constitution.

### Table 3: UFT: Oncological data (association with uterine cancers in 24/226 cases = 10%)  

| No. of Cases | Histology | Reference |
|--------------|-----------|-----------|
| 1            | Uterine lipoma and endometrial cancer | Tloka Plusczyk et al. Polonia:36;223-227, 1968 |
| 1            | Uterine sarcoma with liposarcomatous diff. | Bapat et al. Int J Gynaecol Obstet:28;71-5, 1989 |
| 1            | Uterine lipoma and endometrial cancer | Dovier et al. J Gynecol Obstet Biol Reprod:19;301-305, 1990 |
| 2            | Sarcomas with both lipo and leiomyo-sarcoma cells | Suster et al. Am J Surg Pathol:17;905-911, 1993 |
| 1            | Liposarcoma of the uterus | Schneebeurer et al. GynakolGeburt Rundsch.36;90-91, 1996 |
| 1            | Uterine lipoma and endometrial cancer | Di Gesu et al. Eur J Obstet Gynecol Reprod Biol:80;199-200, 1998 |
| 9            | Lipoleiomyosarcoma | Folpe, Weiss. Am J Surg Pathol:26;742-9, 2002 |
| 1            | Pleomorphic liposarcoma | Levine et al. Int J Gynecol Pathol:22;407-411, 2003 |
| 1            | Liposarcoma | Karatek et al. Int J Gynecol Cancer:15;1230-1234, 2005 |
| 1            | Uterine lipoma and cervical cancer | Dilek et al. Int J Gynecol Cancer:16;445-7, 2006 |
| 1            | Lipoleiomyosarcoma | Abhimanyula et al. NJ Obstet Gynecol:2;67-70, 2007 |
| 1            | Uterine lipoleiomyosarcoma and endometrial cancer | Bolat et al. Turkish J Pathol:2382-86, 2007 |
| 3            | Liposarcoma arising in uterine lipoleiomyoma | McDonald et al. Am J Surg Pathos:35;221-227, 2011 |

### Table 4: Summary of principal variables on UFT

| Total number of cases (337 cases) | Mean age (years) | Prevalence in women < 54 y.o. | Mean size (cm) | Pre-op radiol studies (46) | Incidence of lipoma | Symptoms | Lesiomomas |
|-----------------------------------|------------------|-----------------------------|----------------|--------------------------|---------------------|----------|-----------|
| 1966-2012 = 226                   |                  |                             |                |                          |                     |          |           |
| Table 1 (47 cases) = 57           |                  | 23% (19/83)                 |                |                          |                     |          |           |
| Table 2 (16 cases) = 65           |                  |                             |                |                          |                     |          |           |
| Willen et. (21 cases) = 62        |                  |                             |                |                          |                     |          |           |
| Wang study (50 cases) = 54        |                  |                             |                |                          |                     |          |           |
| Bolat study (10 cases) = 53       |                  |                             |                |                          |                     |          |           |
| Table 1 (46 cases) = 7.7          |                  |                             |                |                          |                     |          |           |
| Table 2 (14 cases) = 9.6          |                  |                             |                |                          |                     |          |           |
| Willen study (21 cases) = 7       |                  |                             |                |                          |                     |          |           |
| Wang study (50 cases) = 4.6       |                  |                             |                |                          |                     |          |           |
| Bolat study (10 cases) = 4.75     |                  |                             |                |                          |                     |          |           |
| 16/46 (us+ct+mr) 4/46 tvs us only 2/46 mr only | 15% (18/121 cases) | 34% (17/50) | 33.3% (34/102) |

**Figure:**

- **UFT** (Uterine Fatty Tumours) are not so uncommon and always benign neoplasm as generally stated. The histogenesis of these lesions is still controversial. The clinical manifestations do not usually differ from those caused by leiomyomas, except that they affect overweight and obese peri-menopausal and aged postmenopausal women. Data on body weight and BMI, however, are missing and should better be given in future.

**Preoperative diagnosis** it is not difficult as far as these tumours are made only postoperatively on histopathology which may directly arise from pluripotent mesenchymal cells or from direct transformation of smooth muscle cells into adipocytes [26,27]. Probably we are dealing with tumour-types having different pathogenesis and therefore different biological susceptibility to oncogenes. A number of various lipid metabolic disorders or other associated conditions with estrogen deficiency as occur in peri or post menopausal period possibly promote abnormal intracellular storage of lipids [28]. As shown by Terada [24] the fatty tissue of lipoma is not degenerative but active proliferative tissue and could be responsible of local productions of estrogen and increased risk of malignant transformation. Wang et al [3] studying 50 patients with UFT for a 7 years period of time have reported that these tumours have an uneventful clinical course and should be confidently regarded as benign. Nevertheless, liposarcomas of the uterus, although extremely rare, exist and are shown to likely arise from malignant transformation of a lipoleiomyoma [29] and have to be added to the differential diagnosis of benign lipomatous tumours (UFT), myxoid mesenchymal tumours, and malignant mixed Mullerian tumours of the uterus. The striking observation of endometrial cancers found in comcomitance with lipomas, as here reported, has an independent and different oncological implication. Deeper investigation on this field is requested before making progress on the oncological risk of the UFT which remain rare tumours undergoing hysterectomy most of the times.

**Conclusion**

UFT are not so uncommon and always benign neoplasm as generally stated. The histogenesis of these lesions is still controversial. The clinical manifestations do not usually differ from those caused by leiomyomas, except that they affect overweight and obese peri-menopausal and aged postmenopausal women. Data on body weight and BMI, however, are missing and should better be given in future.

**Preoperative diagnosis** it is not difficult as far as these tumours are made only postoperatively on histopathology which may also important to rule out the possibility of malignancy. The adoption of proper terminology ("uterine fatty tumours - UFT") definition in clinical studies and "lipoma" or "lipoleiomyoma" after histology, should be respected.
References

1. Jacobs JE, Markowitz SK (1988) CT diagnosis of uterine lipoma. AJR Am J Roentgenol 150: 1335-1336.

2. Willén R, Gad A, Willén H (1978) Lipomatous lesions of the uterus. Virchows Arch A Pathol Anat Histol 377: 351-361.

3. Wang X, Kumar D, Seidman JD (2006) Uterine lipoleiomyomas: a clinicopathologic study of 50 cases. Int J Gynecol Pathol 25: 239-242.

4. Villalonga R, Garcia A, Castelví J, Fort JM, Armengol M, et al. (2009) Lipoma of the Uterine Corpus: Exceptional Eventuality Combined with an Ovarian Thecoma. Case Reports in Medicine 2009: 340603.

5. Bolat F, Kayaselcuk F, Canpolat T, Serkan E, İlhan T (2007) Histogenesis of lipomatous component in uterine lipoleiomyomas. Turkish J of Pathology 23: 82-86.

6. Dodd GD 3rd, Budzik RF Jr (1990) Lipomatous tumors of the pelvis in women: spectrum of imaging findings. AJR Am J Roentgenol 155: 317-322.

7. Chan HHL, Chau MT, Lam CHL, Cheung SCW (2003) Uterine lipoleiomyoma: ultrasound and computed tomography findings. JHK Coll Radiol 6: 30-32.

8. Prieto A, Crespo C, Pardo A, Docal I, Calzada J (2000) Uterine lipoleiomyomas: US and CT findings. Abdom Imaging 25: 655-657.

9. Chu CY, Tang YK, Chan TS, Wan YH, Fung KH (2012) Diagnostic challenge of lipomatous uterine tumors in three patients. World J Radiol 4: 58-62.

10. Kitajima K1, Kaji Y, Imanaka K, Sugihara R, Sugimura K (2007) MRI findings of uterine lipoleiomyoma correlated with pathologic findings. AJR Am J Roentgenol 189: W100-W104.

11. Prasad S, Sayami G, Adhikari D (2007) Lipoleiomyosarcoma an extremely unusual sarcoma of uterus: a case report. NJ Obstet Gynaecol 2: 67-70.

12. Antony J. Lipoleiomyoma of the uterus. www.hcp.obgyn.net/blog/ultrasound

13. Pham CA, Atri M, Senterman MK (1993) Ultrasoundographic appearance of uterine lipoleiomyoma. Can Assoc Radiol J 44: 463-465.

14. Serafini G, Martinoli C, Quadri P, Speca S, Crespi G, et al. (1996) Lipomatous tumors of the uterus: ultrasonographic findings in 11 cases. J Ultrasound Med 15: 195-199.

15. Braun HL, Wheelock JB, Amaker BH, Seeds JW (2002) Sonographic evaluation of a uterine angiolipoleiomyoma. J Clin Ultrasound 30: 241-244.

16. Avritscher R, Iyer RB, Ro J, Whitman G (2001) Lipoleiomyoma of the uterus. AJR Am J Roentgenol 177: 856.

17. Fujimoto Y, Kasai K, Furuya M, Honda N, Tojo R, et al. (2006) Pure uterine lipoma. J Obstet Gynaecol Res 32: 520-523.

18. Manjunatha HK, Ramaswamy AS, Kumar BS, Kumar SP, Krishna L (2010) Lipoleiomyoma of uterus in a postmenopausal woman. J Midlife Health 1: 86-88.

19. Fujiwaki R, Ohnuma H, Miura H, Sawada K (2008) Uterine lipoleiomyoma in an elderly patient: a case report. Arch Gynecol Obstet 277: 471-474.

20. Lau L, Thoeni RF (2005) Case report. Uterine lipoma: advantage of MRI over ultrasound. Br J Radiol 78: 72-74.