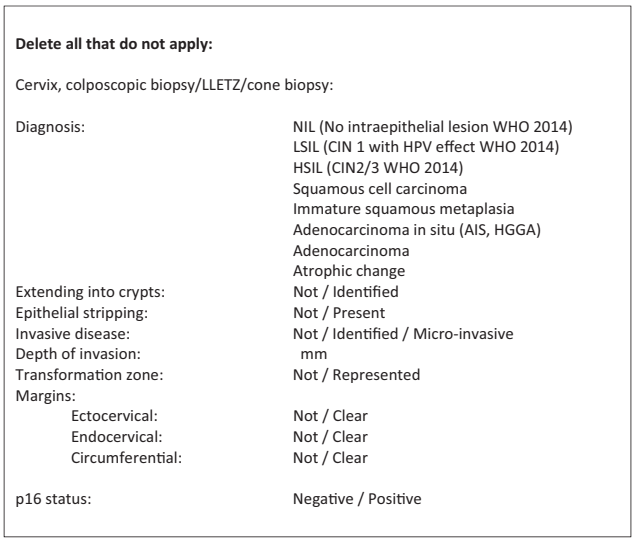

Delete all that do not apply:

Cervix, colposcopic biopsy/LLETZ/cone biopsy:

Diagnosis:	NIL (No intraepithelial lesion WHO 2014) LSIL (CIN 1 with HPV effect WHO 2014) HSIL (CIN2/3 WHO 2014) Squamous cell carcinoma Immature squamous metaplasia Adenocarcinoma in situ (AIS, HGGA) Adenocarcinoma Atrophic change
Extending into crypts:	Not / Identified
Epithelial stripping:	Not / Present
Invasive disease:	Not / Identified / Micro-invasive
Depth of invasion:	mm
Transformation zone:	Not / Represented
Margins:	
Ectocervical:	Not / Clear
Endocervical:	Not / Clear
Circumferential:	Not / Clear
p16 status:	Negative / Positive

Fig. 3 A proposed synoptic reporting format for pathologists reporting colposcopic biopsies and cone biopsies or LLETZ.

HSIL, AIS, micro-invasive or more advanced invasive disease.[12] Additional information about the presence of immature squamous metaplasia, atrophy of epithelium, and stripping of epithelium may explain, for example, an unexpected finding of no intra-epithelial lesion (NIL). A synoptic report as an *aide memoire* for the pathologist and a format to summarise these important components of the pathology report may be useful, can include information about the surgical margins in a cone or LLETZ biopsy, and the p16 status if tested (Fig. 3).

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Bryan Knight

Department of Anatomical Pathology, Southern IML Pathology, SONIC Laboratories, Wollongong, NSW, Australia

Contact Dr Bryan Knight.
E-mail: bryanknight@hotmail.com

1. Cancer Council Australia. National cervical screening program: guidelines for the management of screen-detected abnormalities, screening in specific populations and investigation of abnormal vaginal bleeding. 16 Aug 2018; cited Jan 2019. https://wiki.cancer.org.au/australia/Guidelines:Cervical_cancer/Screening
2. National Centre for Immunisation Research and Surveillance (NCIRS). *Evaluation of the National HPV Vaccine Program Final Report: 28 August 2014*. Westmead: NCIRS; 2014. https://www.health.gov.au/sites/default/files/evaluation-national-hpv-program.pdf
3. Gertig DM, Brotherton JML, Budd AC, *et al*. Impact of a population-based HPV vaccine program on cervical abnormalities: a data linkage study. *BMC Med* 2013; 11: 227–39.
4. Hall MT, Simms KT, Lew B, *et al*. The projected timeframe until cervical cancer elimination in Australia: a modelling study. *Lancet Public Health* 2019; 4: e19–27.
5. Wrede CD, Brand A, Hammond I. Cancer Council Australian Cervical Cancer Screening Guidelines Colposcopy Working Party. *Colposcopy*. 15 Aug 2018; cited Jan 2019. https://wiki.cancer.org.au/australia/Guidelines:Cervical_cancer/Screening/Colposcopy
6. Australian Society for Colposcopy and Cervical Pathology. *Meetings and courses*. Cited Jan 2019. https://www.asccp.com.au/about-us
7. Gravitt PE, Winer RL. Natural history of HPV infection across the lifespan: role of viral latency. *Viruses* 2017; 9: 267–77.
8. Gray W, Kocjan G. *Diagnostic Cytopathology*. 2nd ed. London: Elsevier Health Sciences, 2003; 677.
9. Richards A, Dalrymple C. Abnormal cervicovaginal cytology, unsatisfactory colposcopy and the use of vaginal estrogen cream: an observational study of clinical outcomes for women in low estrogen states. *J Obstet Gynaecol Res* 2015; 41: 440–4.
10. Darragh TM, Colgan TJ, Cox T, *et al*. The lower anogenital squamous terminology standardization project for HPV-associated lesions: background and consensus recommendation from the College of American Pathologists and the American Society for Colposcopy and Cervical Pathology. *Arch Pathol Lab Med* 2012; 136: 1267–97.
11. McCluggage WG. Endocervical glandular lesions: controversial aspects and ancillary techniques. *J Clin Pathol* 2013; 56: 164–73.
12. World Health Organization (WHO). *Comprehensive Cervical Cancer Control: A Guide to Essential Practice*. 2nd ed. Geneva: WHO, 2014.

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Primary immature teratoma of the thigh

Sir,

Teratomas are germ cell tumours composed of a variety of somatic tissues derived from more than one germ layer (ectoderm, endoderm and mesoderm), commonly found in the gonads, in children and young adults.[1] Less frequently teratomas arise in extragonadal sites, usually in a midline location, such as sacrococcygeal region, retroperitoneum, mediastinum and central nervous system. Mature teratomas harbour, by definition, mature, benign, well-differentiated tissues, while immature teratomas are composed of variable amounts of fetal, immature tissues. Monodermal teratomas are defined by the presence of a single tissue type (i.e., thyroid tissue in struma ovarii). Usually, immature teratomas are graded according to the Norris grading system,[2] based on the presence and amount of immature neuroepithelial component. Both mature and immature teratomas may contain foci of other germ cell tumours, as well as foci of malignant transformation. We report the very unusual case of a primary immature teratoma arising in left thigh soft tissue in an elderly woman.

An 86-year-old female presented with an ulcerated soft tissue mass in the postero-inferior region of the left thigh. The resected lesion, measuring 14 × 13 × 4.5 cm, appeared soft, brownish and multilobulated on the surface. After sectioning, the mass showed both solid and cystic-like areas containing a mucoid material; necrosis and haemorrhages were also present. Histological examination revealed a neoplasm with both mesenchymal and epithelial differentiation. Areas with tubular and glandular structures, reminiscent of embryonic tissues, embedded in a cellular stroma, were frequently observed (Fig. 1A,B). Cystic spaces lined by a prismatic or cubic epithelium were also present. Primitive MAP2+/CD56+ neuroepithelium arranged in tubules and rosettes, with brisk mitotic activity, admixed with mature glial (GFAP+) and meningeal tissue, was frequently detected (Fig. 1C). A scarce mesenchymal component was also present, prevalently consisting of mature cartilage islands (Fig. 1D) and well differentiated smooth muscle fibres, without overt features of malignancy. Infiltration of soft tissues at the periphery of the lesion was focally observed. In the specimens examined, there was no evidence of residual ovarian tissue. The above morphological features led to a

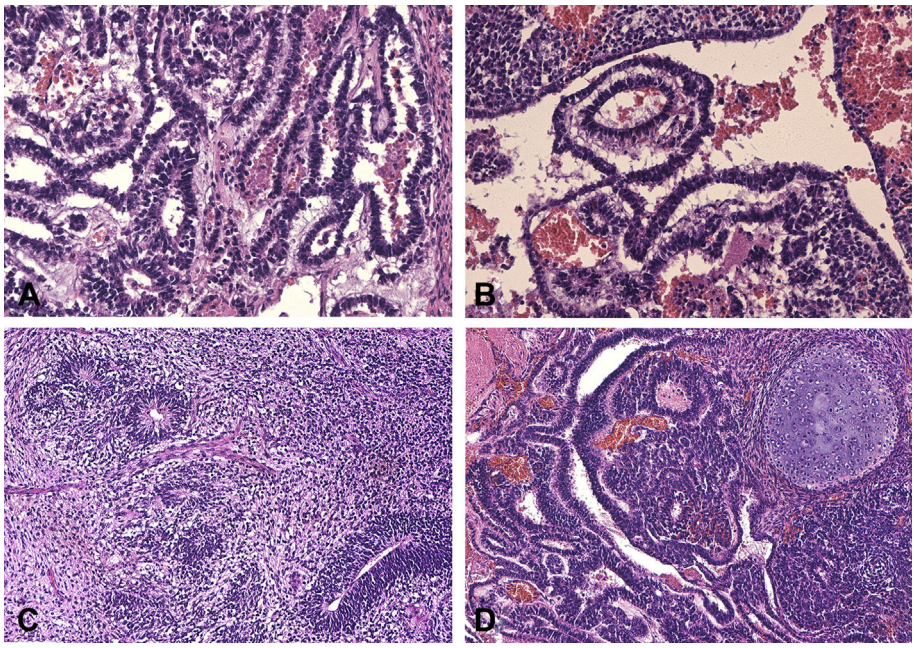

Fig. 1 Histological examination of primary immature teratoma of the thigh (H&E). (A,B) Areas with tubular and glandular structures, embedded in a spindled, embryonal-like cellular stroma. (C) Immature neuroectodermal component, in the form of tubules and rosettes dispersed in a glial tissue. (D) Small nodule of cartilage, without overt atypia contiguous to glandular structures.

diagnosis of immature teratoma (grade 3, according to Norris *et al.*).[2] Based on the absence of clinical and radiological evidence of an ovarian lesion or tumour mass elsewhere, the teratomatous lesion of the thigh was assumed originating primarily in soft tissues. Serological levels of AFP and CA19.9 were not evaluated in the postoperative course. After surgery, the patient was lost to follow-up.

The occurrence of a teratoma outside the common gonadal and midline locations is exceedingly rare. Interestingly, in female patients we did not find reports on primary immature teratoma located in soft tissues of the extremities, but only two cases of thigh metastasis from ovarian teratoma.[3,4] Ovarian immature teratoma commonly metastasises to the peritoneal cavity or regional lymph nodes and, less frequently, to lung and liver. In male patients, only three cases of primary teratoma located in soft tissue of the extremities have been reported, in the absence of clinically appreciable testicular or lesions elsewhere.[5–7] Notwithstanding, cases of soft tissue metastases from testicular germ cell tumours have been documented.[8]

In the present case, the occurrence of an immature teratoma located in soft tissues of the thigh in an elderly female patient, in the absence of clinical and radiological evidence of ovarian or tumours elsewhere, strongly favours a primary origin of the lesion. Our assumption seems supported by the common knowledge that ovarian immature teratomas occur during the first decades of life, as confirmed by Norris *et al.*, who did not find any such tumour in female patients older than 40 years.[1,2]

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Antonella Coli[1], Silvia Careri[2], Marco Gessi[1], Giulio Maccauro[3]

[1]Division of Pathology, Fondazione Policlinico Universitario A. Gemelli IRCCS - Università Cattolica del Sacro Cuore, Rome, Italy; [2]Orthopaedics and Traumatology, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy; [3]Department of Orthopaedics and Traumatology, Fondazione Policlinico Universitario A. Gemelli IRCCS - Università Cattolica del Sacro Cuore, Rome, Italy

Contact Dr Antonella Coli.
E-mail: Antonella.Coli@unicatt.it

1. Kurman RJ, Carcangiu ML, Herrington CS, *et al*., editors. *WHO Classification of Tumours of Female Reproductive Organs*. 4th ed. Lyon: IARC Press, 2014.
2. Norris HJ, Zirkin HJ, Benson WL. Immature (malignant) teratoma of the ovary: a clinical and pathologic study of 58 cases. *Cancer* 1976; 37: 2359–72.
3. Plaza JA, Perez-Montiel D, Mayerson J, *et al*. Metastases to soft tissue: a review of 118 cases over a 30-year period. *Cancer* 2008; 112: 193–2013.
4. Byun JC, Choi IJ, Han MS, *et al*. Soft tissue metastasis of an immature teratoma of the ovary. *J Obstet Gynaecol Res* 2011; 37: 1689–93.
5. Chinoy RF, Soman CS, Swaroop D, *et al*. Extragonadal malignant teratoma of the foot. *Indian J Cancer* 1992; 29: 96–9.
6. Benali AH, Lalya L, Allaoui M, *et al*. Extragonadal mixed germ cell tumor of the right arm: description of the first case in the literature. *World J Surg Oncol* 2012; 10: 69.
7. Zuquello RÁ, Tagliari G, Bagatini R, *et al*. Immature teratoma presenting as a soft-tissue mass with no evidence of other sites of involvement: a case report. *Diagn Pathol* 2016; 11: 76.
8. Bilici A, Ustaalioglu BB, Seker M, *et al*. Case report: soft tissue metastasis from immature teratoma of the testis: second case report and review of the literature. *Clin Orthop Relat Res* 2010; 468: 2541–4.

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