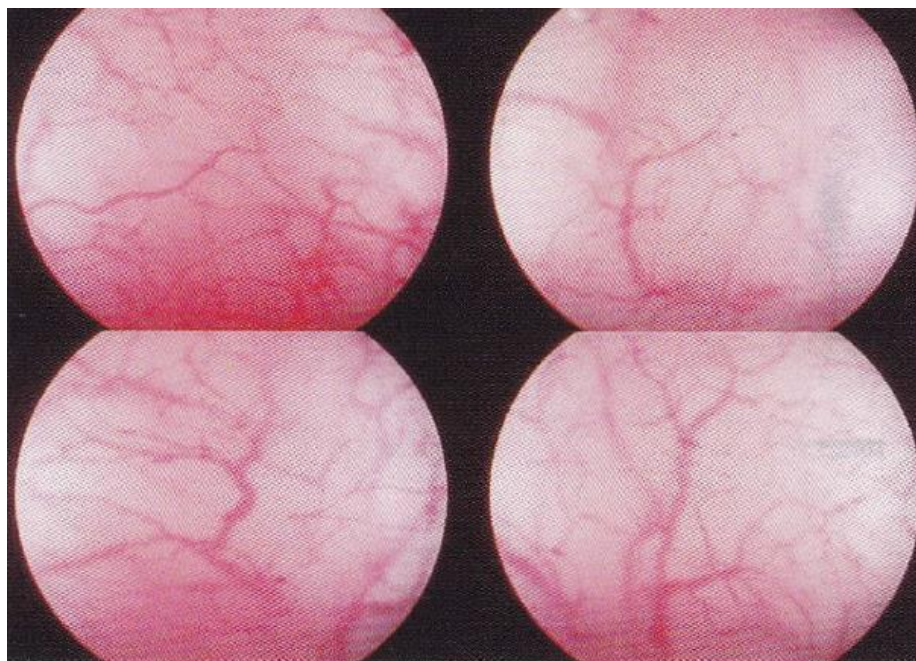


**Figure 9.** Menstruation. The fundus is already denuded. Remark the patches of functional endometrium still present whilst the endometrium is expelled in a spiral fashion starting at the cornual parts of the uterine cavity. (CO<sub>2</sub> distention 100 mm HG)

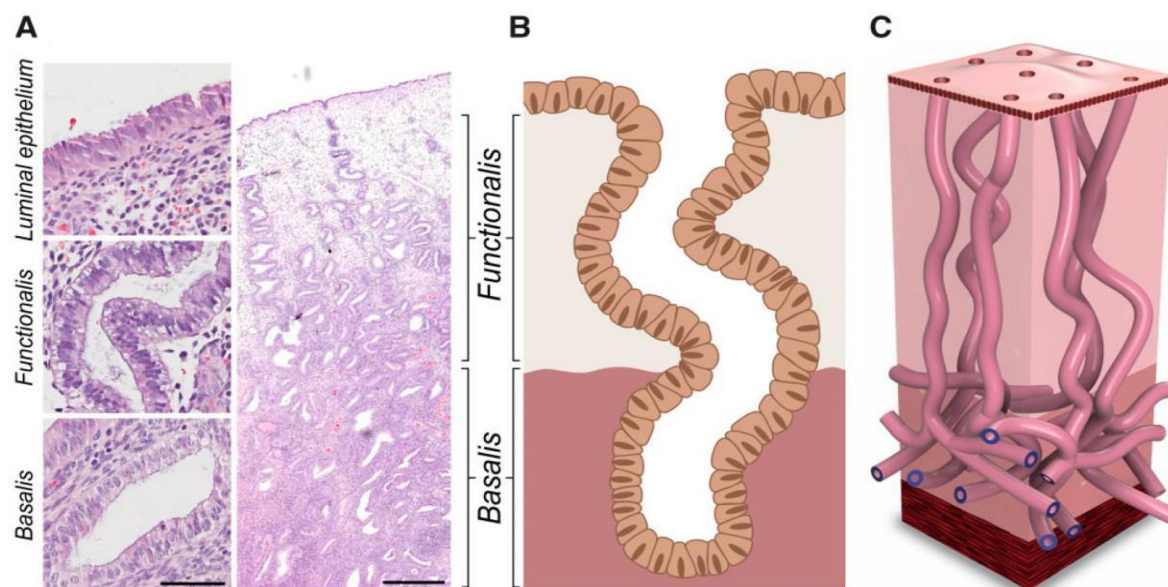
### Discussion:

First of all, it has to be noted that pinpointing the ovulation phase by the visual impressions of the vessels through the hysteroscope, the original scope of the study, averred to be an illusion due to the fact that hormonal changes do occur first and anatomical changes do follow the latter (5). This study did lead to the division of the cycle in five periods, phases, according to the visual appearance of the arterioles as described in the results, in correlation with the anamnestic data and the pathologic results obtained by direct biopsies through the hysteroscope (1-2). These results have been obtained by CO<sub>2</sub> gas distention of the uterine cavity. This gas does induce hyperemia causing the arterioles to be better visible. In the later observations distention fluid has been used. This method of distention allows for the

endometrium to “hang” into the uterine cavity allowing for a better detailed observation of the vessels and therefore for a more accurate interpretation (6). With the normal vasculature in mind, focus can be turned on interpreting the visual features of the arterioles of the endometrium in patients with endometrial abnormalities. Histopathology does describe changing in vessel concentration with a significant higher concentration in complex hyperplasia and pill endometrium whilst congestion and dilatation is significantly higher in patients with AUB (3) (Fig 10). These changes can be observed at hysteroscopy even without contact mode. The recent findings concerning the microanatomy of the endometrial glands does strengthen the results of the first studies as the “vertical” glands have a feeding vessel with lots of arborizations, the described coiled arterioles (7 - 8) (Fig 11).



**Figure 10.** Pill endometrium. The very pink colour is due to an increased numeric presence of vessels, in a significantly higher concentration than in the normal.



**Figure 11.** Architecture of human endometrial glands: past and present: (A) Hematoxylin and eosin-stained human endometrial section at x400 and x 20 magnification (scale bars= 50 and 500  $\mu\text{m}$ , respectively). (B) 2 D scheme of the pre--2020 consensus view of endometrial glandular architecture, with functional glands running a vertical course to the basalis gland and terminating in blind pouches. (C) 3D scheme of the novel endometrial gland arrangement based on recent findings, with basalis glands exhibiting a branching, mycelium like configuration running perpendicular to functionalis glands (Tempest N, Hill C J, Maclaen A, Marston K, Powell SG, Al-Lamee H, Hapangama D. Novel microarchitecture of human endometrial glands: implications in endometrial regeneration and pathologies. Hum Reprod Update 2021;28(2):153-171)

There is also the need to harmonize the denomination of arterioles by both gynaecologists and pathologists in the different phases of the cycle.

### Conclusion:

Observing the endometrial arterioles during routine hysteroscopy does give valuable

information concerning the phase of the cycle and even on possible symptoms as perceived by the patient.

However, as the studies on visualization of the arterioles in the endometrium have been performed in the period of CO<sub>2</sub> distention, there is need for large clinical observational studies with liquid distention media.

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