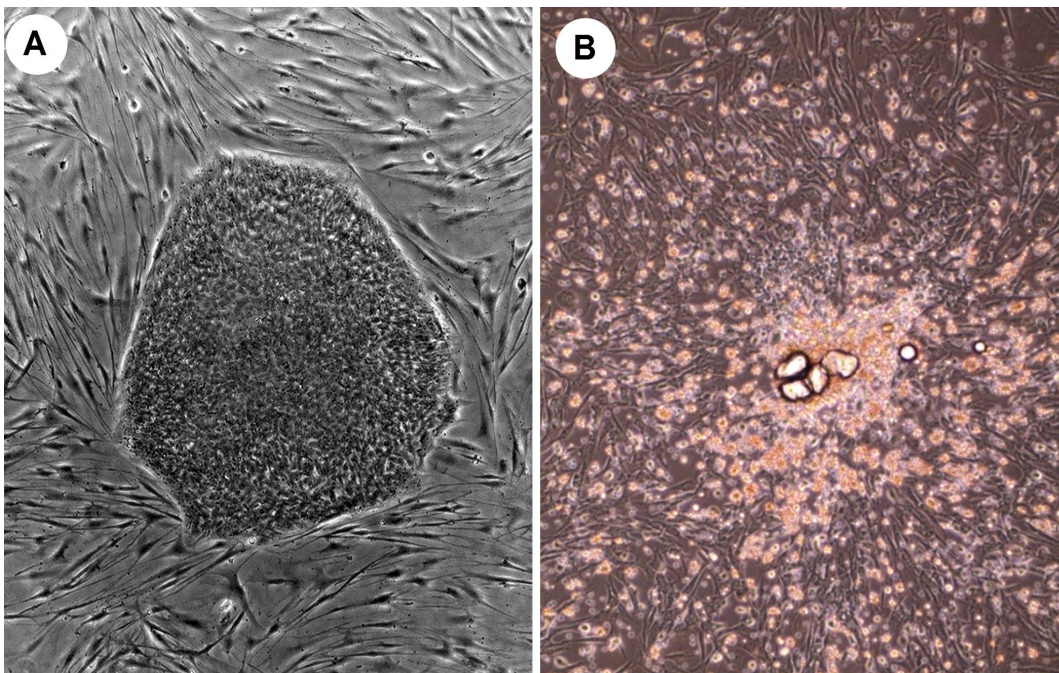
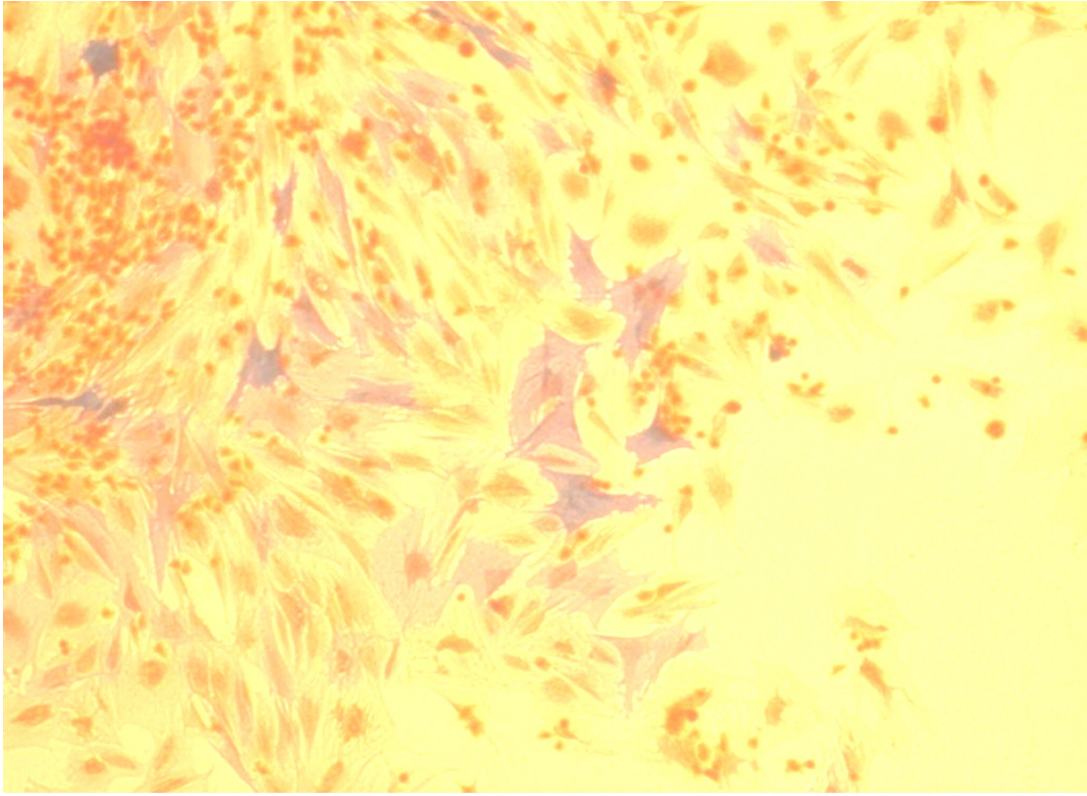


Section  
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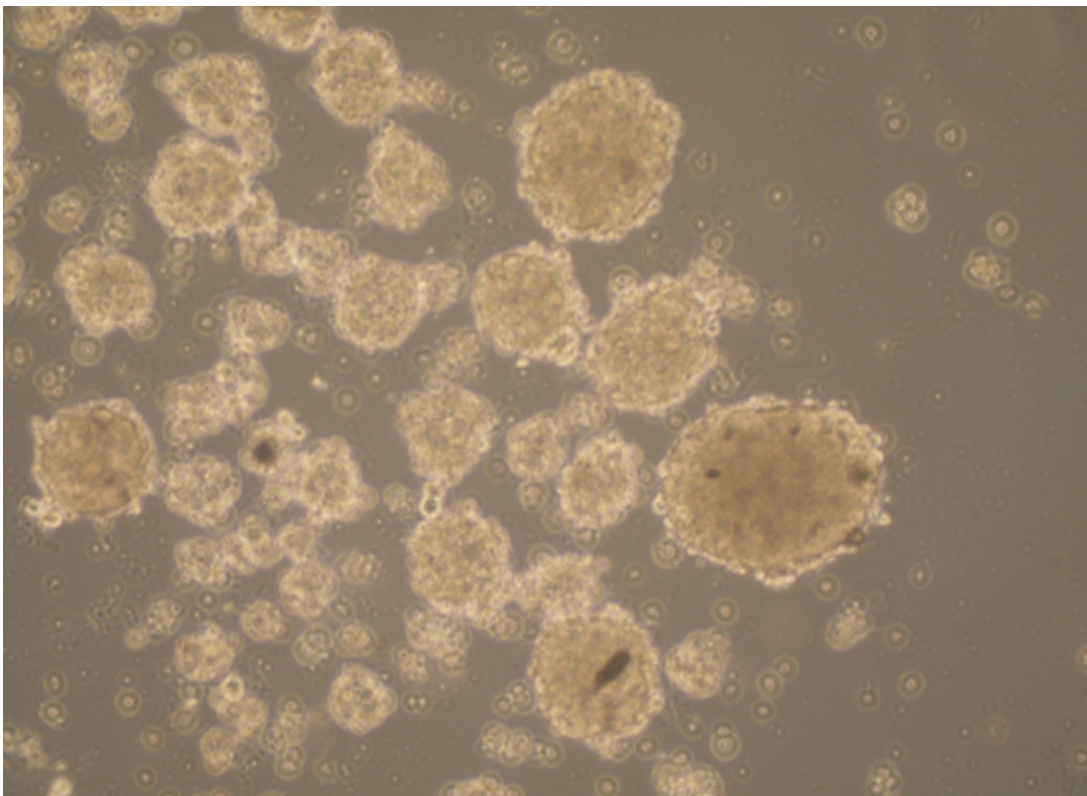
## Disorders of Growth and Differentiation



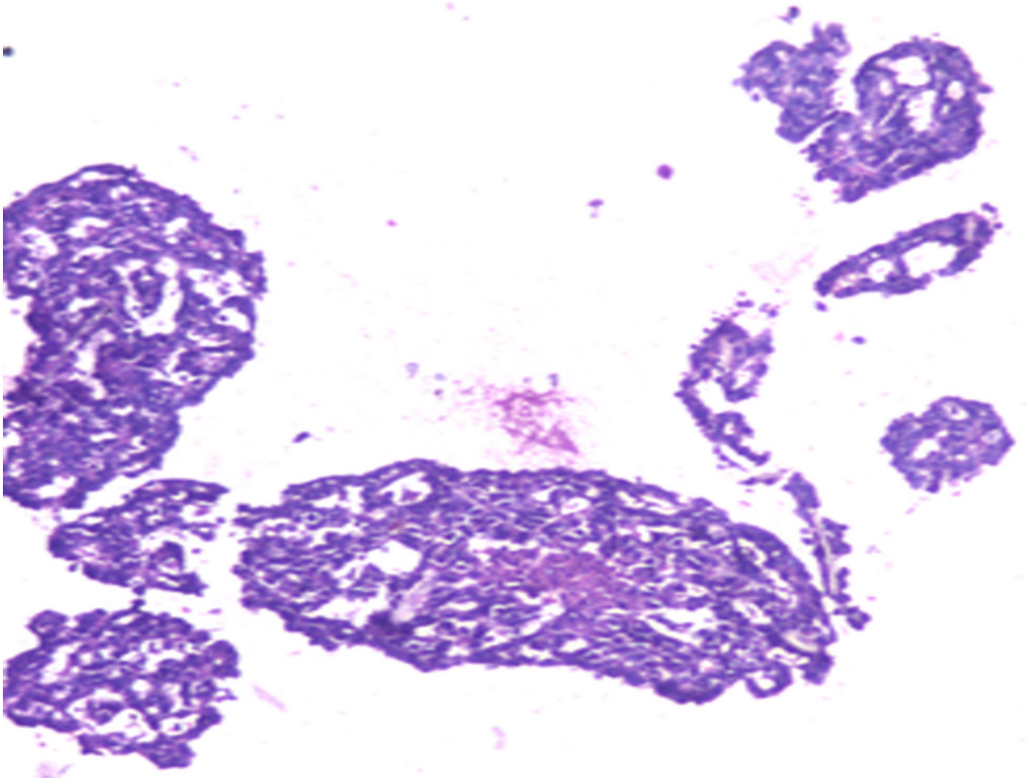
**P 12-1.** Bone marrow stem cell mesenchymal differentiation, phase contrast microscopy. **A** Colony of self-renewing embryonic stem cells growing as a monolayer. **B** Fibroblast colony-forming unit formed by bone marrow mesenchymal stem cells.



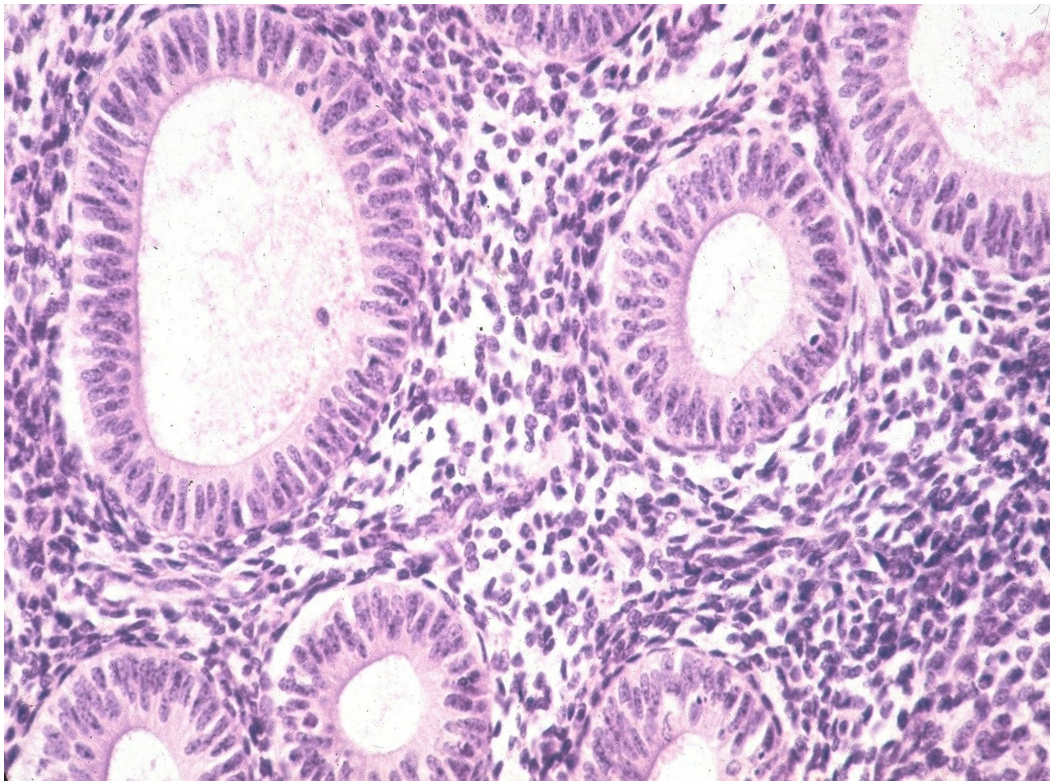
**P 12-2** Bone marrow stem cell, bone differentiation. Bone marrow stem cells in culture showing osteoblastic differentiation proved by positive alkaline phosphatase histochemical stain.



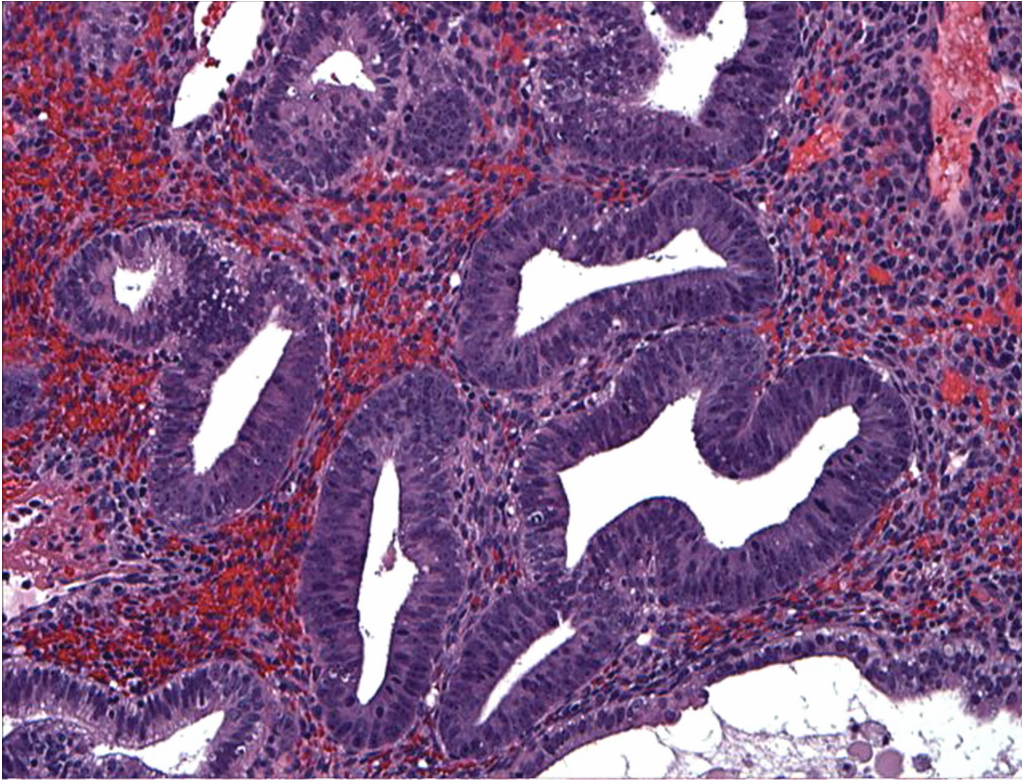
**P 12-3.** Culture of breast cancer cell line (MCF7), phase contrast microscopy. Note the formation of numerous rounded cell clusters (mammosphere of tumor cells).



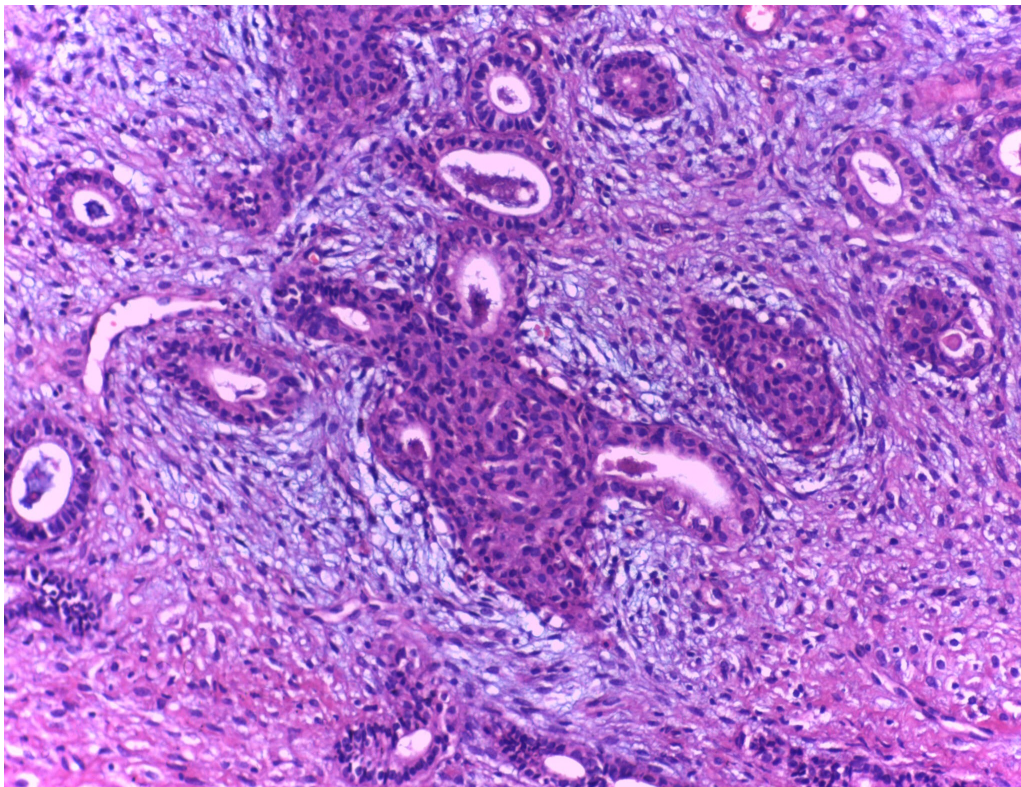
**P 12-4.** Tissue section of the (mammosphere), stained with (H&E). Differentiation into ductal structures is apparent .



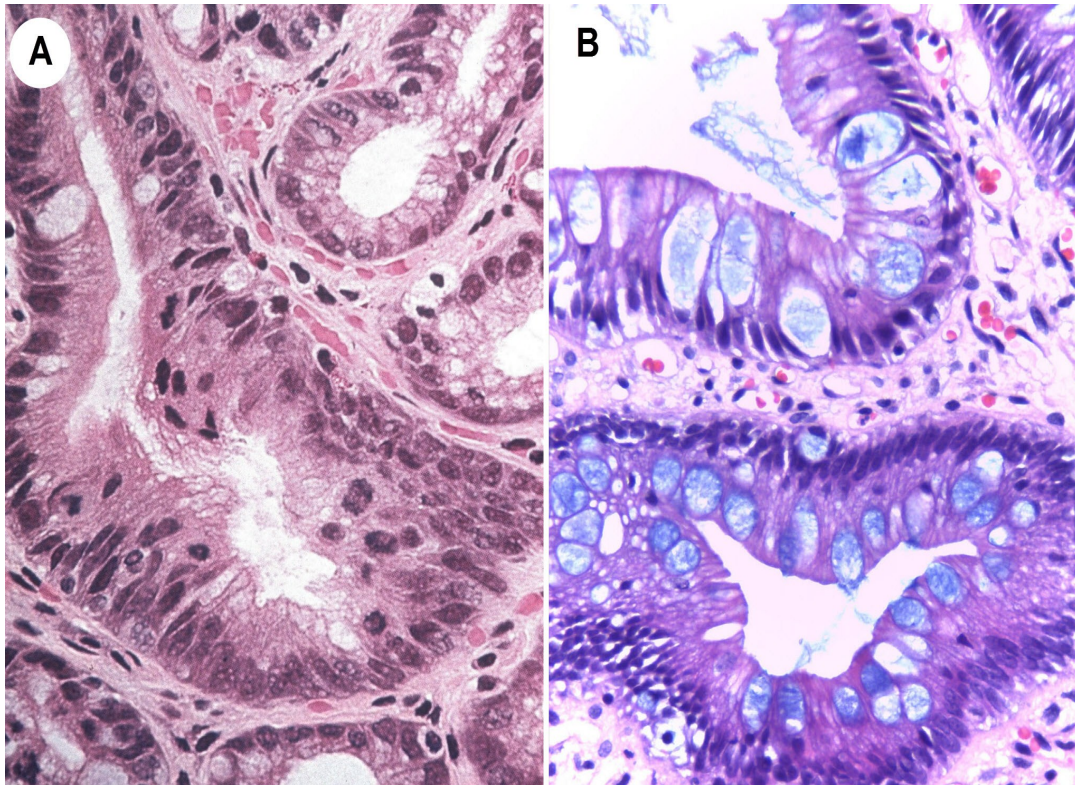
**P 12- 5.** The updated WHO classification of endometrial hyperplasia. Endometrial hyperplasia without atypia. There is increase in glands relative to stroma, pseudostratified epithelium but no atypical cytologic features.



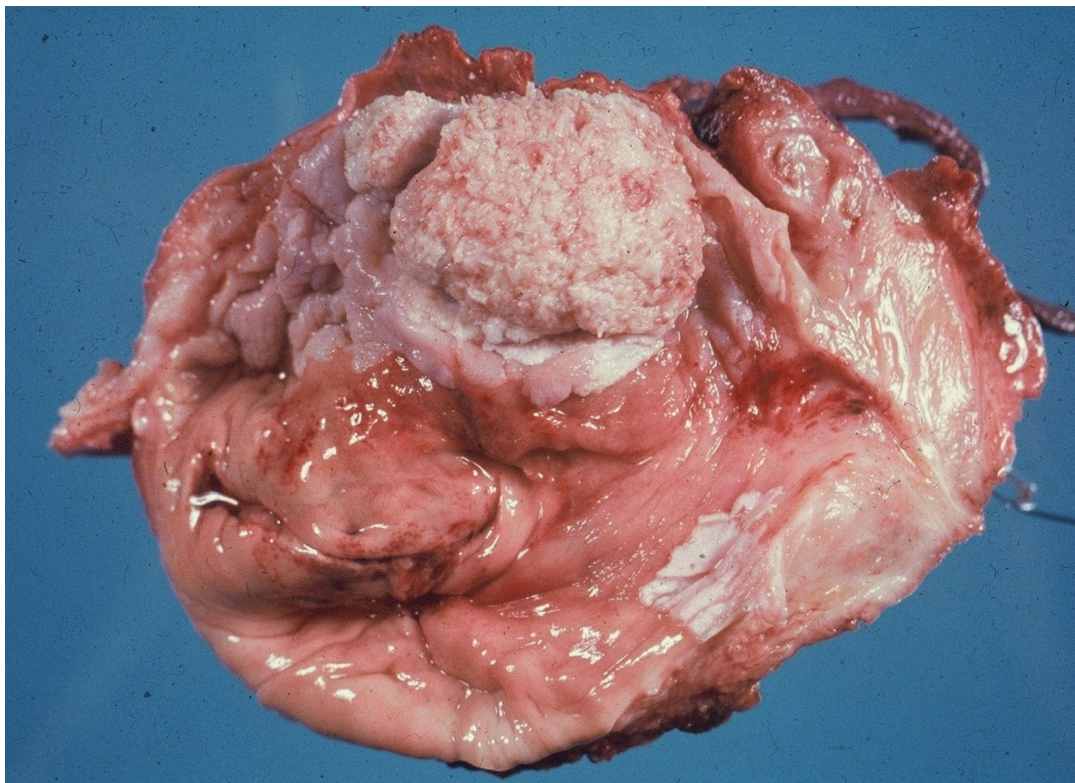
**P 12-6.** Endometrial hyperplasia with atypia. There is loss of polarity, marked stratification reaching the lumen, marked pleomorphism and prominent nucleoli. Stroma is scanty but still present in between the glands (courtesy of PathologyOutlines.com).



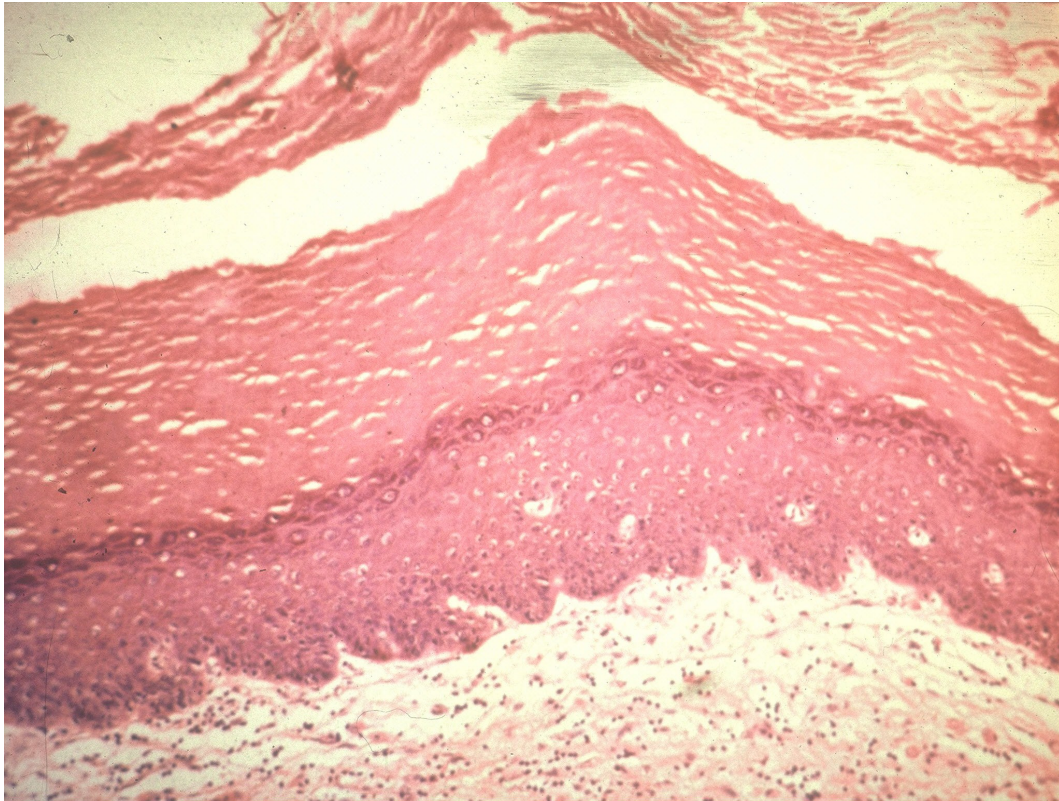
**P 12-7.** Squamous metaplasia of endocervical glands. The presence of the glandular epithelium in the superficial location of the lesion distinguish it from invasive squamous carcinoma.



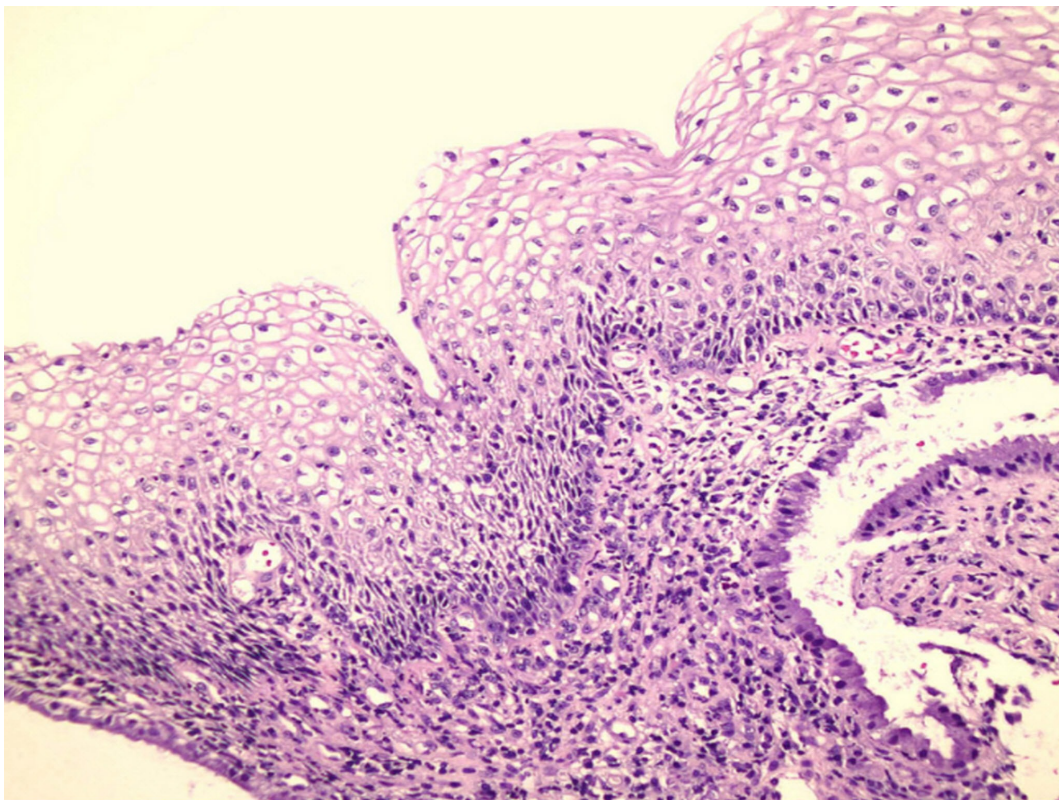
**P 12-8.** Barrett's metaplasia of distal esophagus. **A** H&E section showing intestinal metaplasia with both Paneth and goblet cell lining. **B** Alcian blue staining of goblet cells.



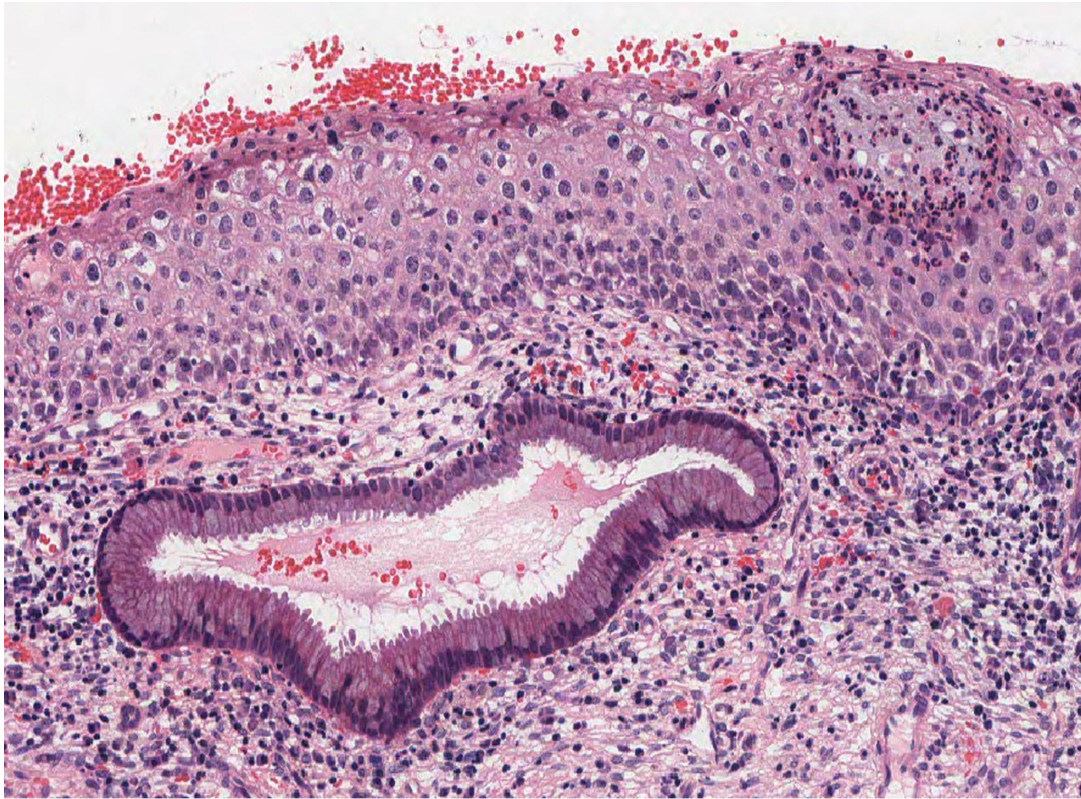
**P 12-9.** Bladder cancer, cystectomy specimen showing a nodular squamous cell carcinoma associated with squamous metaplasia (leukoplakia) as well as bilharzial sandy patches of urothelium.



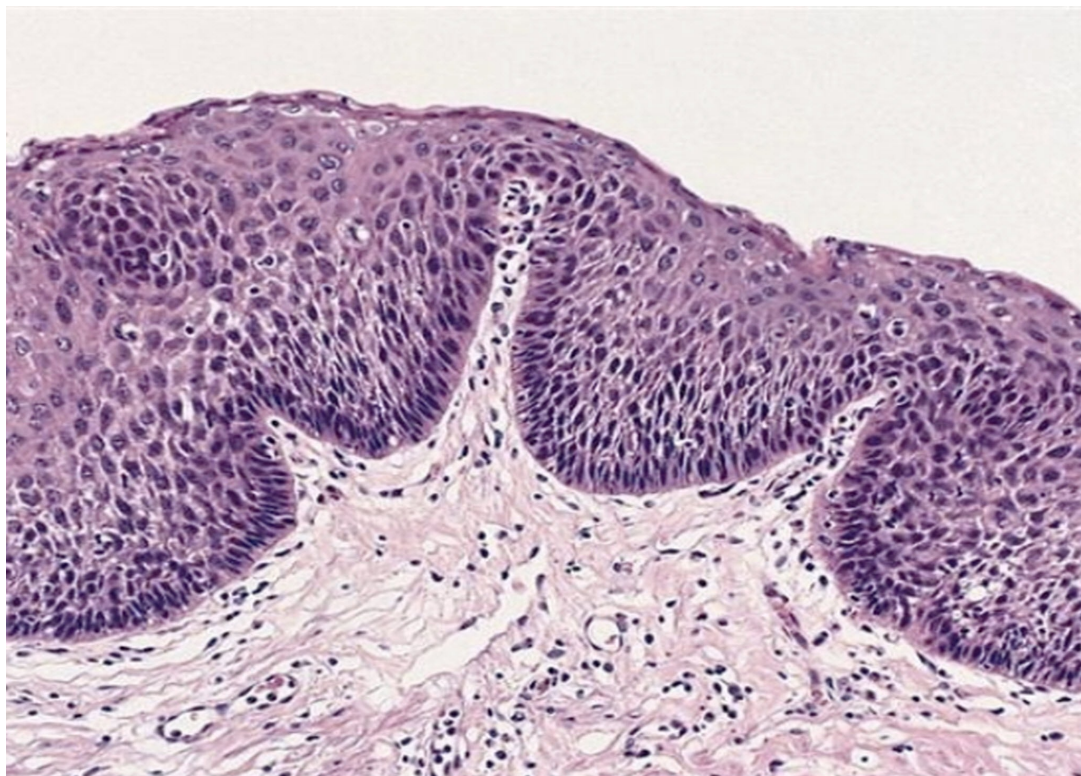
**P 12-10.** Squamous metaplasia of urothelium with extensive hyperkeratosis presents grossly as white patches (leukoplakia)



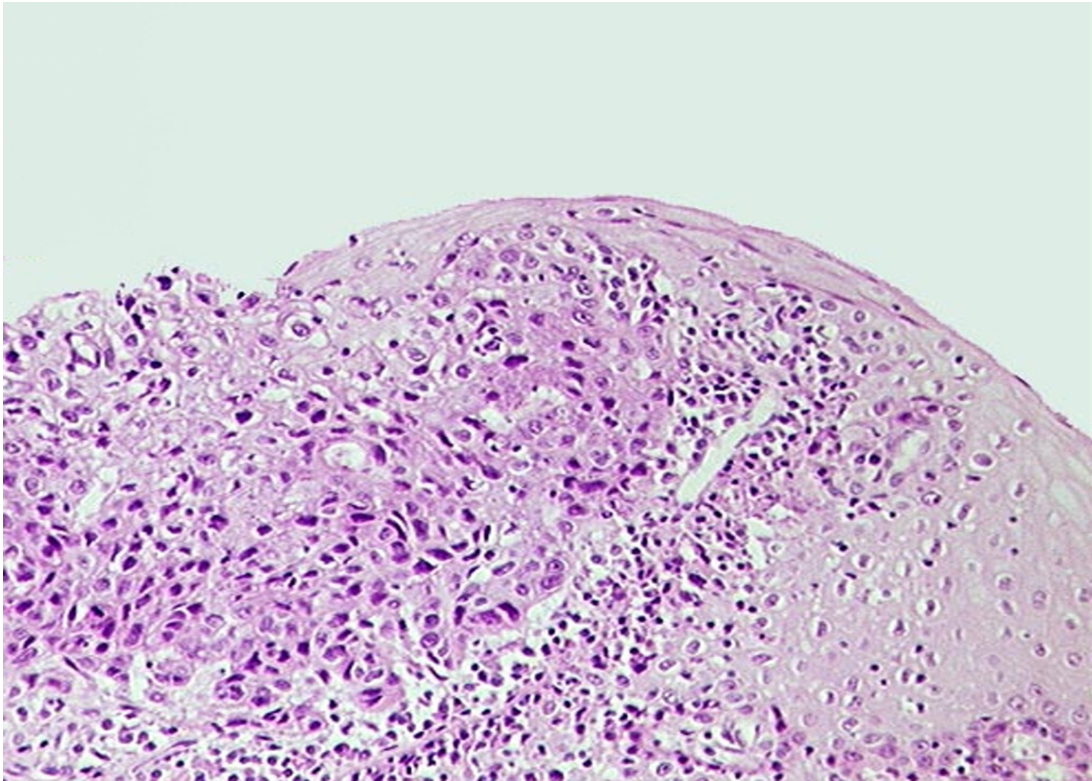
**P 12- 11.** Bethesda classification of cervical squamous lesions. Low grade squamous intraepithelial lesion, LSIL (mild dysplasia), limited to the basal part.



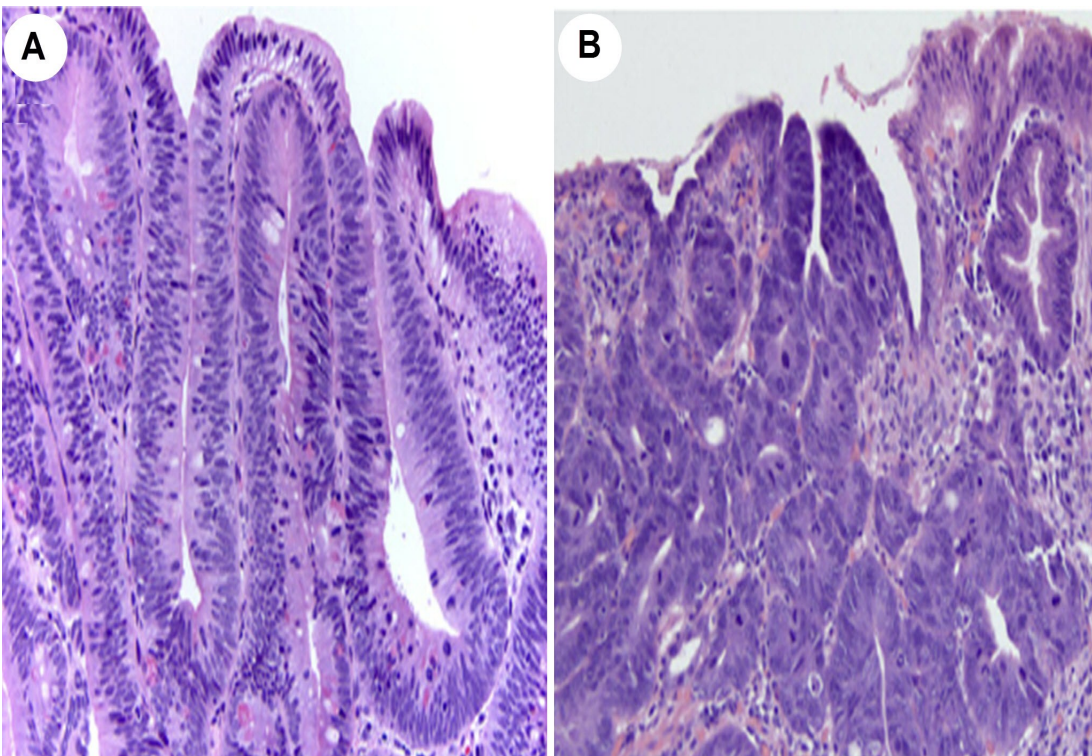
**P 12-12.** Bethesda classification of cervical squamous lesions. High grade squamous intraepithelial lesion, HSIL. Dysplastic cells extend to the upper part of the epithelial thickness



**P 12-13.** WHO low grade squamous dysplasia of upper aerodigestive tract (UADT). The dysplastic changes are limited to the lower half of the epithelial thickness (courtesy of PathologyOutlines.com).

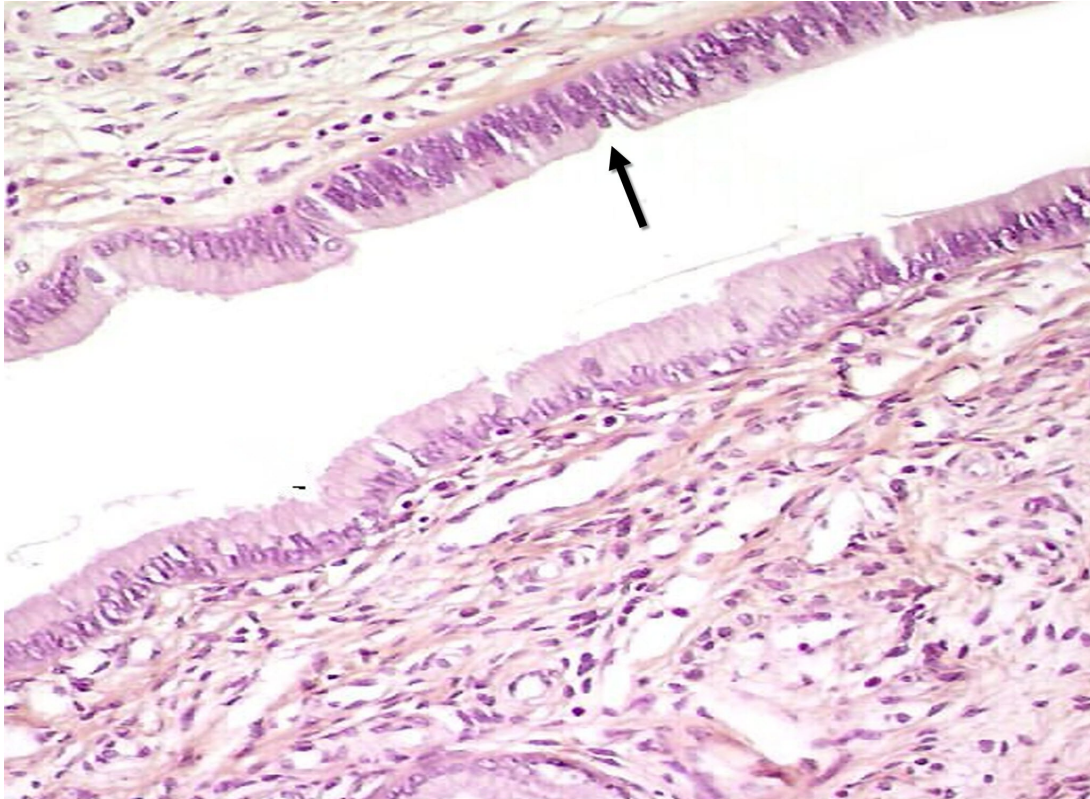


**P 12-14.** WHO high grade squamous dysplasia of upper aerodigestive tract (UADT). The atypical cells extend to involve the upper half of the epithelial thickness, partially or totally. This includes the previous types "marked dysplasia and CIS" (courtesy of PathologyOutlines.com).

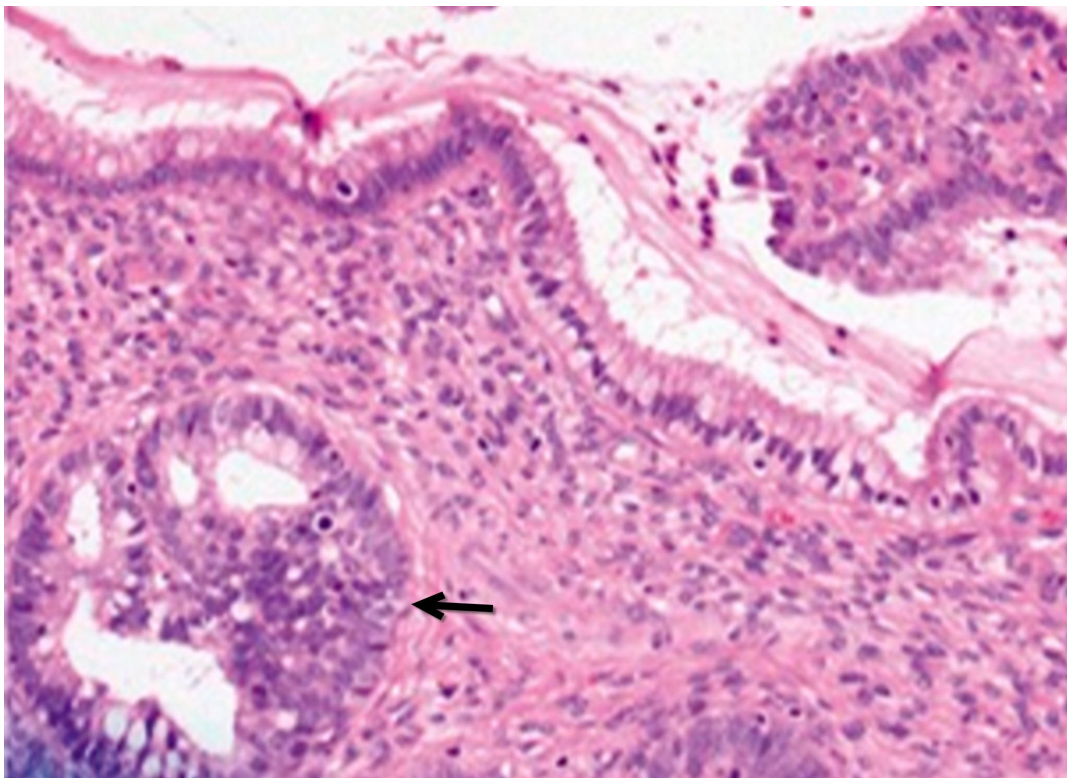


**P12-15.** Gastric dysplasia, WHO grading. **A** Low-grade dysplasia with limited architectural abnormalities and hyperchromatic nuclei. **B** High-grade dysplasia with glandular crowding, loss of polarity, marked cytologic atypia, prominent nucleoli, and high mitotic activity.

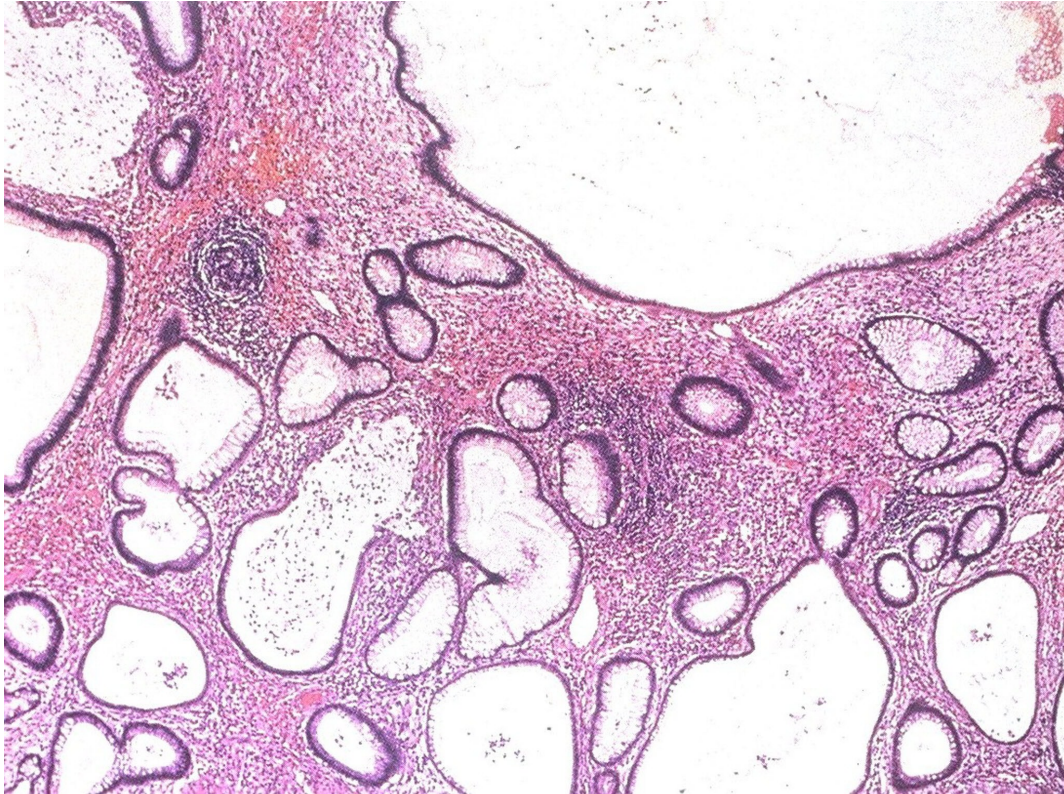




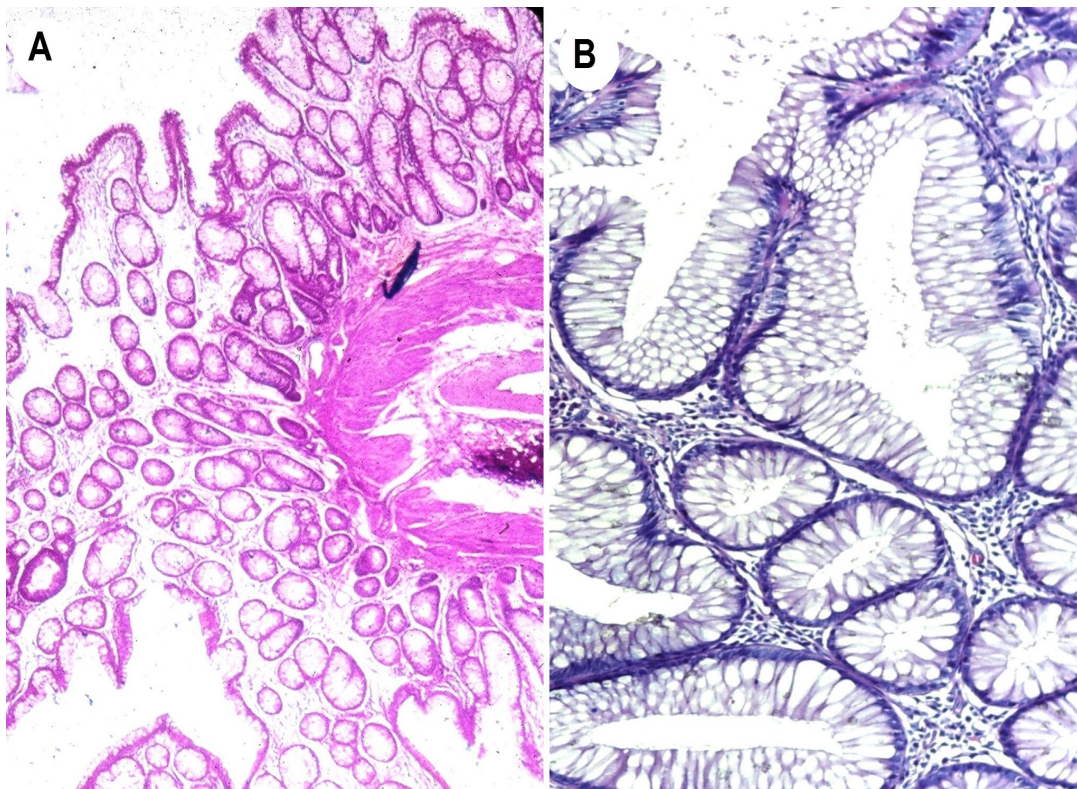
**P 12-16.** Endocervix low-grade dysplasia (formerly low grade CGIN). Elongated pseudostratified (arrow) nuclei but basal in location (courtesy of PathologyOutlines.com).



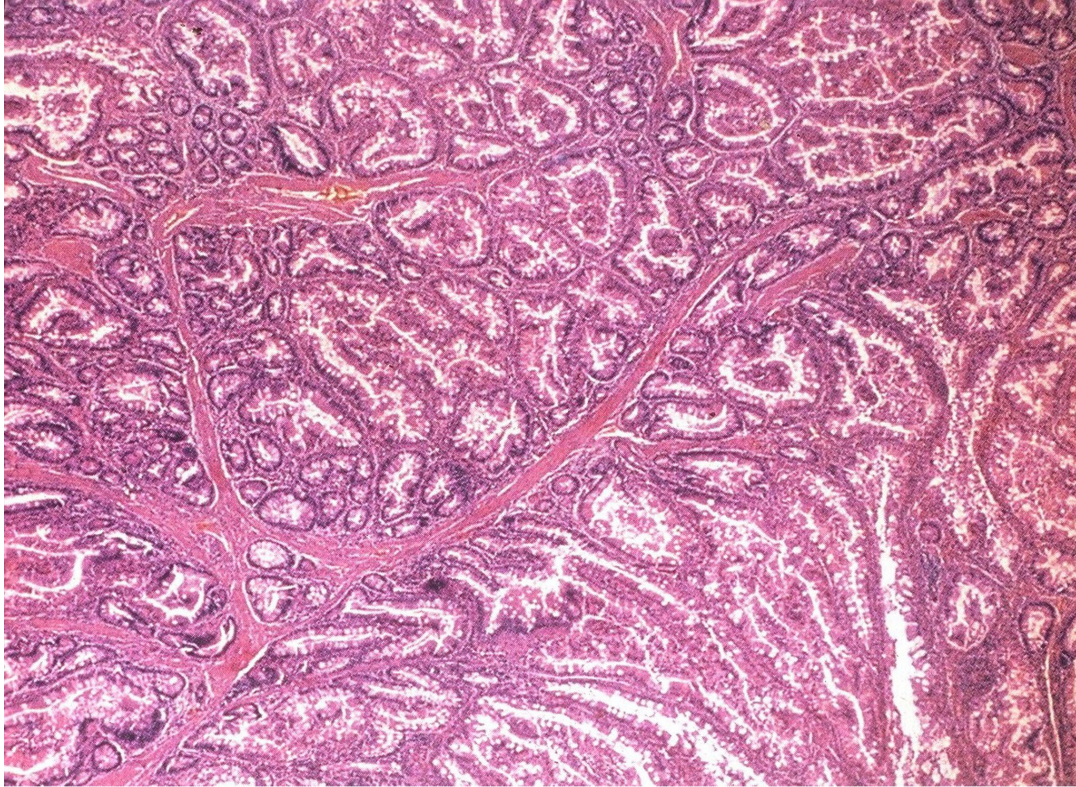
**P 12-17.** Endocervix (CGIN), high-grade cervical glandular intraepithelial neoplasia (arrow). Hyperchromatic glandular nuclei with pseudostratification, relative paucity of mucin, mitotic activity, compared with normal surface epithelium.



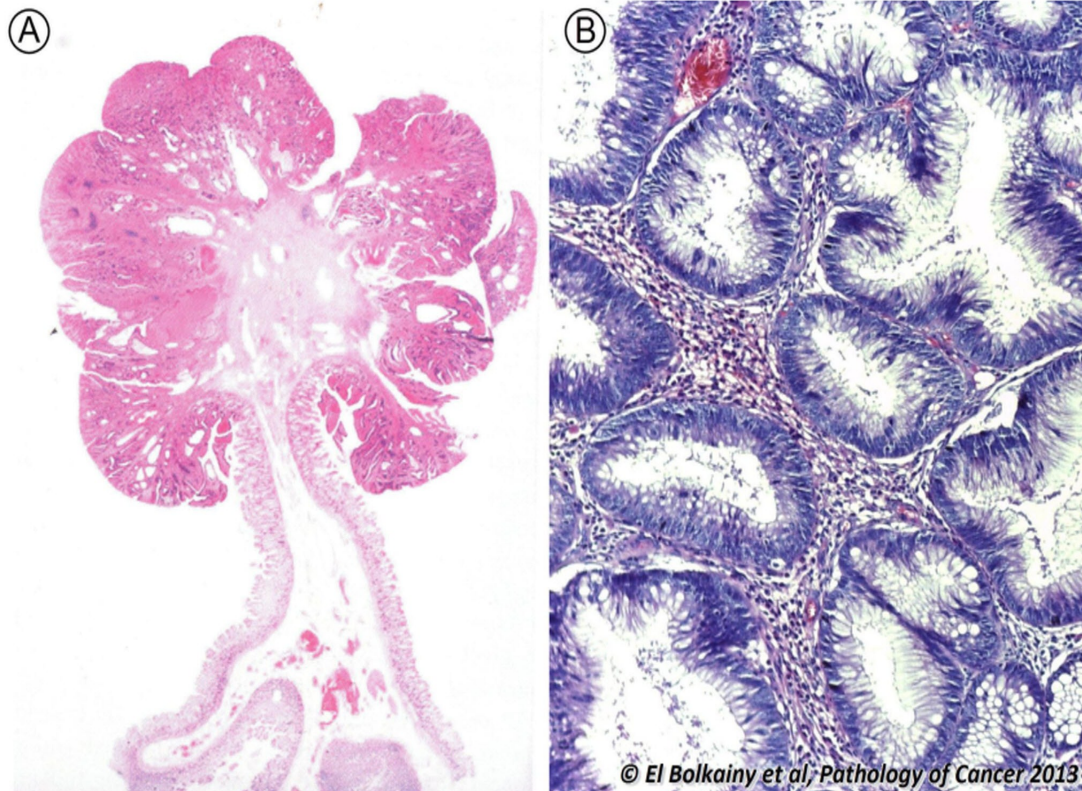
**P 12-18.** Rectum, solitary juvenile polyp. Marked inflammation in the stroma with cystically dilated glands filled with mucin. A low risk polyp.



**P 12-19.** Colon, hyperplastic polyp. **A** and **B** Small size and sessile, the glands are lined by non-dysplastic goblet cells with elongated crypts. This is a no-risk polyp.

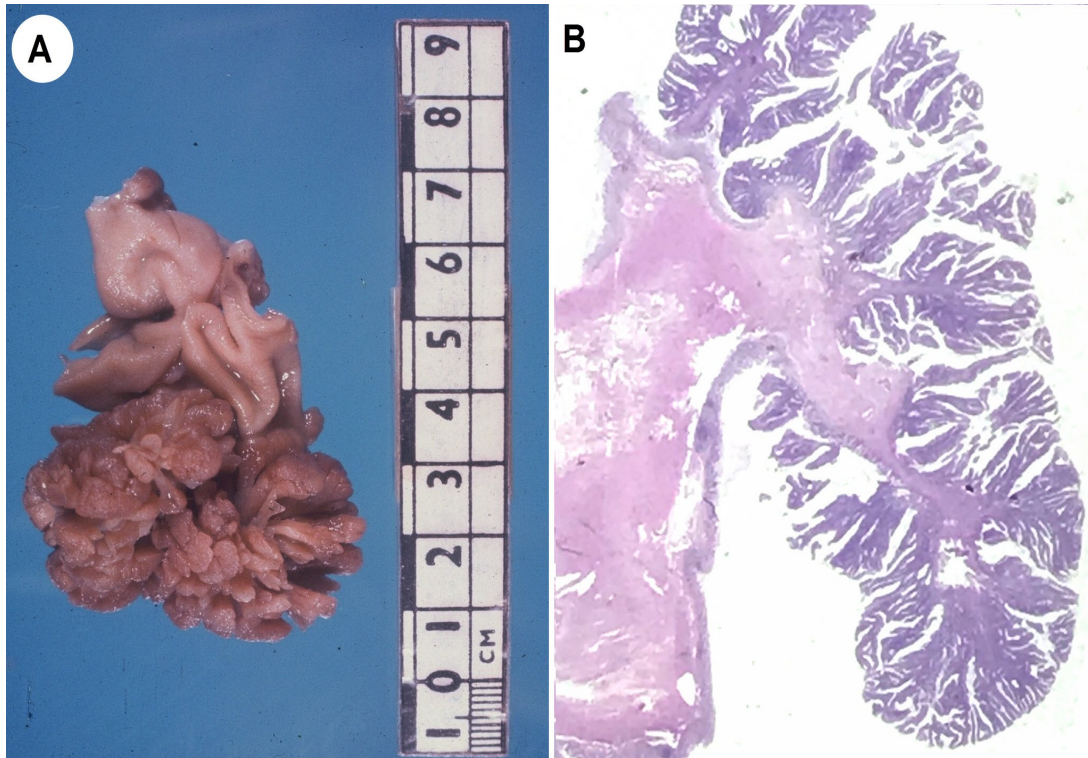


**P 12-20.** Small intestine, hamartomatous polyp of Peutz-Jegher syndrome. Normal intestinal epithelium associated with smooth muscle component. No dysplasia is seen.

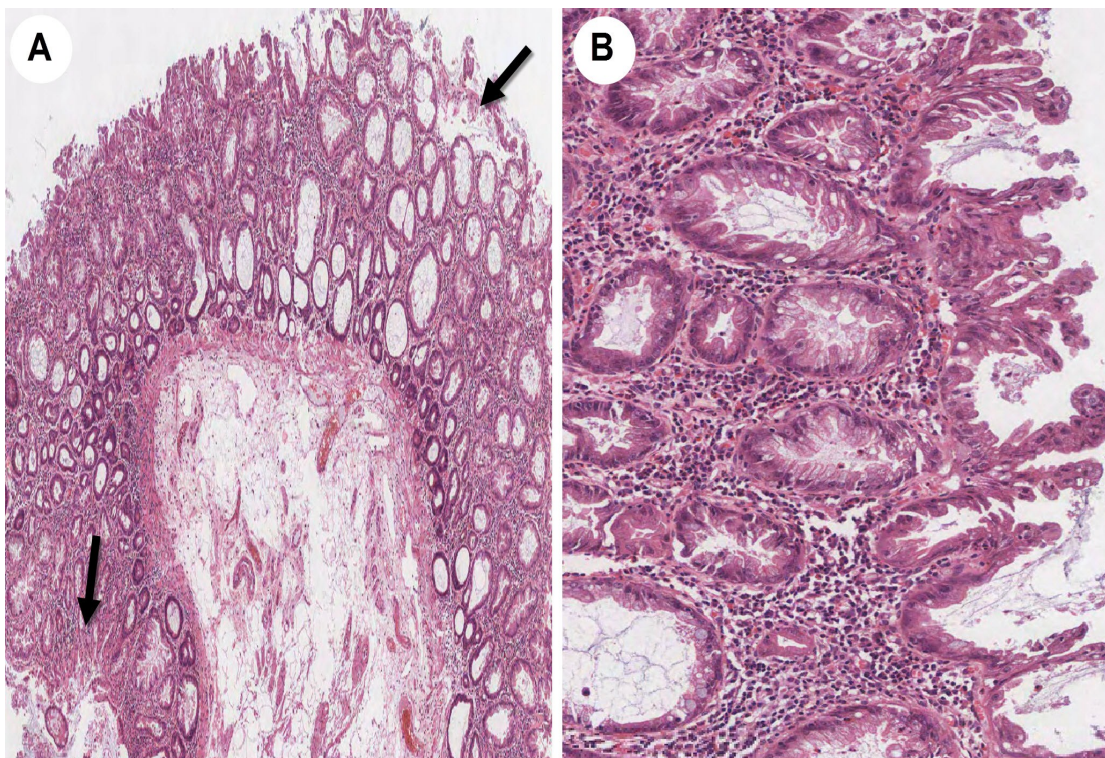


**P 12-21** Colon, Tubular adenoma. **A.** low power showing pedunculated polypoid tumor. **B.** High power, epithelium with mild dysplasia in the form of stratified but basal nuclei.

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**P 12-22.** Colon, tubulovillous adenoma. **A** Gross picture shows a pedunculated polypoid growth. **B** Whole tumor section scan showing villous & tubular growth of dysplastic cells with no stromal invasion. High-risk polyp.



**P 12-23.** Right colon, sessile serrated polyp. **A** Low power showing irregular and cystically dilated glands near the surface of the polyp. **B** High power showing the serrated appearance of the dilated glandular epithelium. Exact cancer risk is so far uncertain.