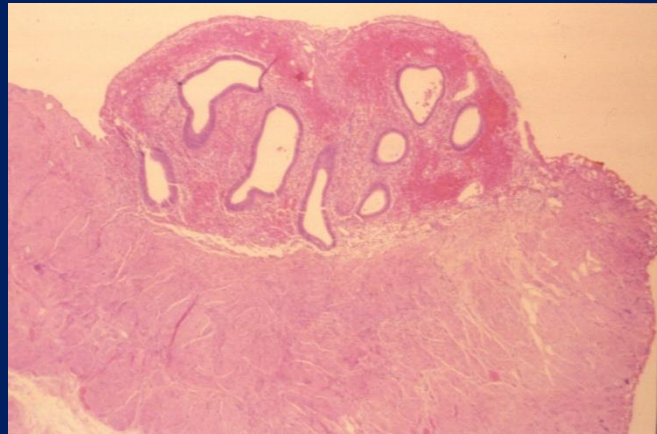


Laparoscopic Appearance of Endometriosis



Dan C. Martin

Laparoscopic Appearance of Endometriosis

Dan C. Martin, M.D.

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This web revision incorporates low resolution sides into the manuscript to link to higher resolution images in the cloud. Click the image or the slide designator [*HRI_***] for the higher resolution image. The last two digits of the slide designator correspond to the slide numbers in the manuscript.

Additional Resources:

1990 Color Atlas: www.danmartinmd.com/files/coloratlas1990.pdf

Endometriosis Concepts: <http://www.EndometriosisConcepts.com/>

Downloads: <http://www.danmartinmd.com/sitemap.html>

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The reader is advised to carefully examine new information as it is available. The reader is also advised to consider that diagnosis, therapy, and management of endometriosis are separate concepts. Techniques discussed in this publication may have been modified or abandoned by the time of publication.

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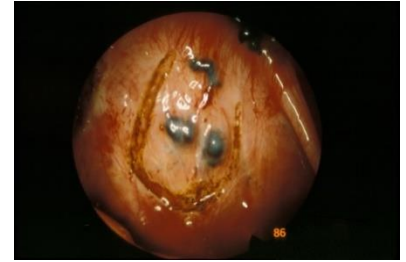
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Laparoscopic Excision

1. Infiltrating endometriosis was excised (Martin 1985, 1986, 1987, 1988, 1989, 1990) and sent for pathology. Superficial disease was biopsied and coagulated or excised. This mid cul-de-sac cluster of lesions is circumscribed with a CO₂ laser in superpulse by incising through the peritoneum into the loose connective tissue. Repeat pulse superimposed on superpulse gives better control by slowing the process. [\[HRI_01\]](#)
2. After the lesion was circumscribed, it was pulled forward with grasping forceps and the laser was used to incise the loose connective tissue or fat behind the lesion. With the laser in superpulse, the incision is clean, and a distinction could generally be made between loose connective tissue, fat and scarred endometriosis. [\[HRI_02\]](#)

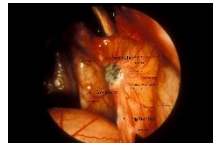


Black (Dark) Scarred Lesions

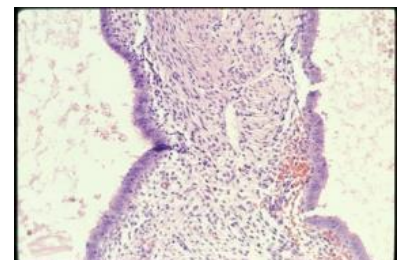
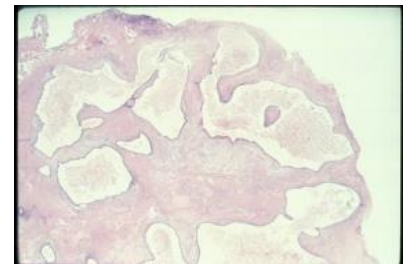
3. Dark (black), scarred (puckered) lesions are the easiest to see and to document by biopsy or excision. These can be histologically confirmed in 87% to 99% of cases under research conditions and 56% to 86% in clinical use. (Martin 1989, Martin, 1990, Buchweitz 2003, Martin 2006) [\[HRI_03\]](#) Satellite lesions of 1-mm to 3-mm were noted years later while reviewing the images. [\[HRI_03b\]](#)



[\[HRI_03b\]](#) satellites labeled



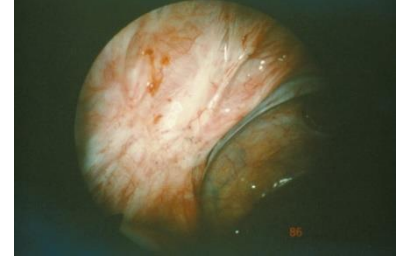
4. These lesions generally have a diffuse mixture of glands, stroma, intraluminal debris, fibrosis and muscle. [\[HRI_04\]](#)
5. In these lesions, fibrosis, stroma, hemorrhage and hemosiderin laden macrophages separate the glands that contain old blood. [\[HRI_05\]](#)



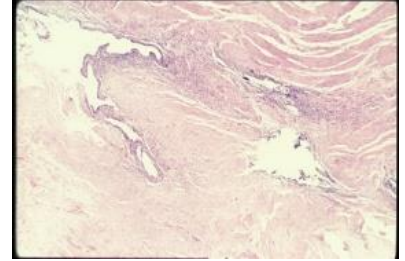
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White Lesions

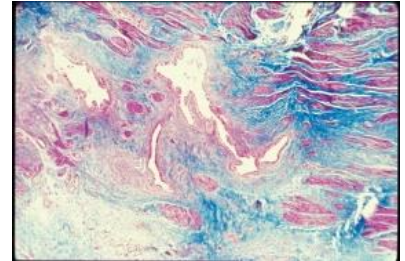
6. Scarred white lesions can be harder to see. This lesion involves almost half of the photographic field of the left broad ligament. In the high resolution, linked picture, carbon from inadequate laser vaporization is seen. A better picture of carbon is on page 27 (file page 34) at <http://www.danmartinmd.com/files/coloratlas1990.pdf> [[HRI_06](#)]



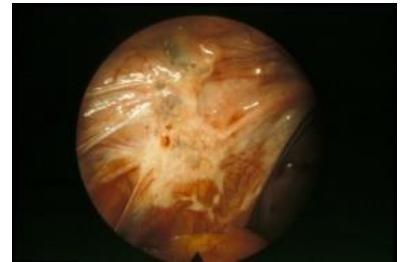
7. In these white areas, sparse stroma and glands surrounded by a fibrous tissue and muscle is the predominant picture. [[HRI_07](#)]



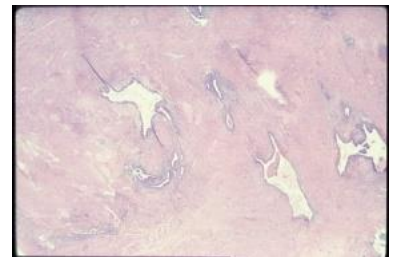
8. Trichrome stain was used to demonstrate the fibrous and muscular components. The fibrous component is likely reactive and the muscular portion metaplastic. [[HRI_08](#)]



9. These diffuse, predominately white, scarred areas are easier to see in areas when the glands contain hemosiderin residual from intraluminal bleeding. [[HRI_09](#)]



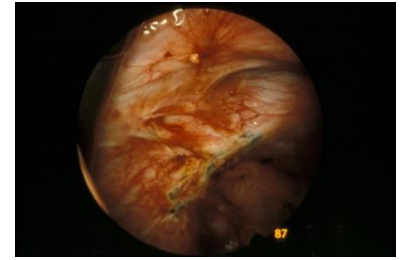
10. These glands are deep in the fibromuscular scar. [[HRI_10](#)]



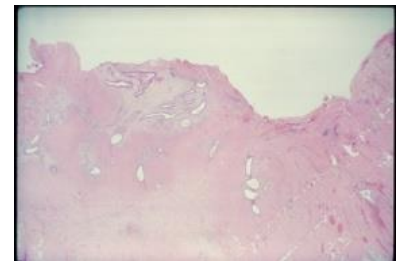
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Red Lesions

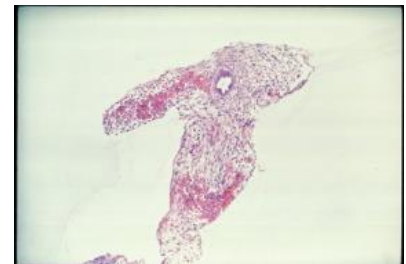
11. When these dark, scarred areas were associated with reddish polyps and reddish reaction, the red polypoid areas were commonly endometriosis. [\[HRI_11\]](#)



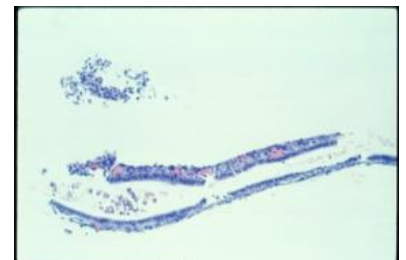
12. Many reddish areas were associated with deeper glands and stroma. [\[HRI_12\]](#)



13. Reddish polyps are predominantly glands and stroma. [\[HRI_13\]](#)



14. The smallest polyp was a single gland of about 150 μ in width and 800 μ in length. [\[HRI_14\]](#)



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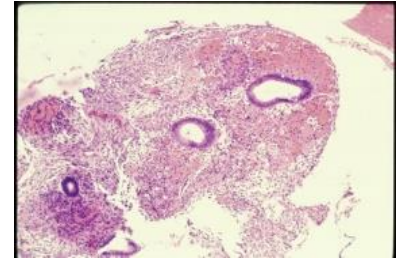
15. These red polypoid lesions are on the surface of a deep scarred perirectal nodule. The largest is about 4 x 7 mm on the surface and blend into the deep fibromuscular scar like slide 12.

[\[HRI_15\]](#)

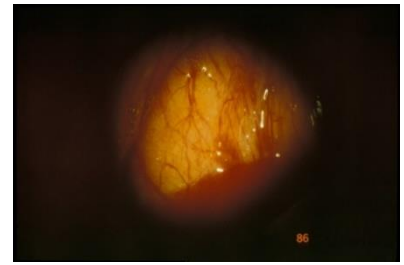


16. Red polyps usually contain glands and stroma with variable degrees of vascularity and hemorrhage. Scarring is uncommon within the polypoid surface, but common beneath the surface.

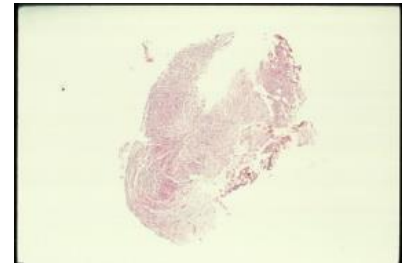
[\[HRI_16\]](#)



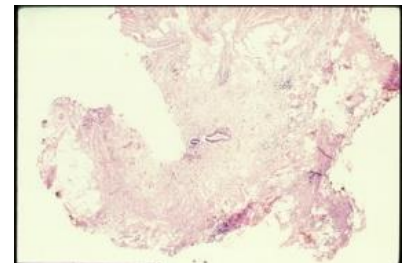
17. Some of the red polyps are so light as to assume a pink or yellow appearance making recognition more difficult. [\[HRI_17\]](#)



18. This polypoid lesion is predominantly stroma. This lesion was cut 6 times to find glands at the base. The 4 cuts through the top of the lesion were stroma only. [\[HRI_18\]](#)

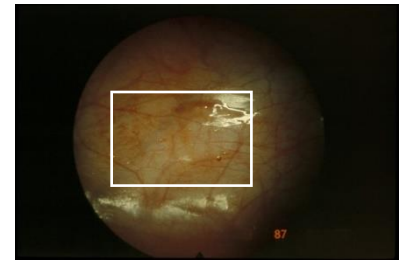


19. On the 5th and 6th cuts, glands and stroma are noted at the base of the lesion. [\[HRI_19\]](#)

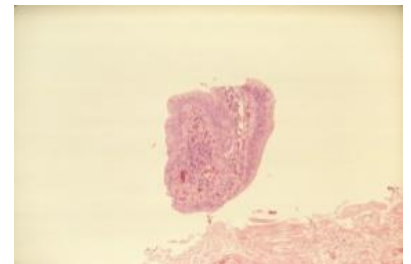


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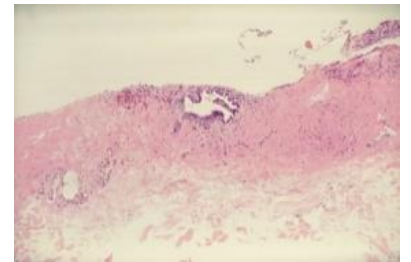
20. Teenagers frequently have small red polyps and white blebs as isolated findings. In this 19-year-old, the red polyp was 400 μ . The 200 μ intraepithelial lesion had no stroma. The 80 μ and 100 μ lesions were noted 30 years later after reviewing Badescu (2016 & 2018) and Roman (2016). They have an appearance similar to the 200 μ lesion. [\[HRI 20\]](#), [\[HRI 20b\]](#), & [\[HRI 20c\]](#).



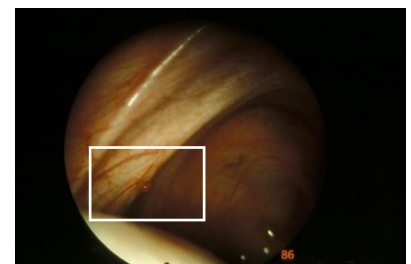
21. The 400 μ polyp in the 19-year-old was a polyp with glands and stroma. [\[HRI 21\]](#)



22. The small clear areas were epithelial lesions of 200 μ or less with no stroma. The epithelial type of these was compatible with endometriosis. The 80 μ lesion in slide 20 was not recognized during surgery and was not investigated. If done in 2020, I would ask pathology to section for 40 μ pathology and consider CD10, Ber-EP4, pan-cytokeratin, calretinin, Ki-67, and ER/PR. [\[HRI 22\]](#)



23. The youngest patient in this series was a 13-year-old who had a vascularized red polyp of the left uterosacral ligament [\[HRI 23\]](#) & [\[HRI 23b\]](#). Jacque Donnez had a similar lesion with higher resolution seen on slide [23c](#) (with permission). Similar vascularized lesions are demonstrated in figure 1a in Wiegerinck (1993) and figure 1 (top left) in Brosens (2016) ([open access](#)). A reddish area of stromal endometriosis in the same patient is seen on slide 25.



The histology is on slide #25.

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24. Histology confirmed endometriosis in this 13-year-old. The stroma is highly vascularized as in [\[HRI 23c\]](#) above.[\[HRI 24\]](#)



25. Of interest, the same patient, as in slides 23 & 24, had an almost healthy right cul-de-sac with a reddish blush that histologically was stromal endometriosis. If the area had been serially sectioned, glands may have been found as in slide 19. Sectioning a 1-cm lesion at 5 μ would create about 2,000 sections. [\[HRI 25\]](#)



26. At a one-year interval, at age 14, pockets and red polyps had developed in the right cul-de-sac (same patient and area of the biopsy in slide 25). Ron Batt, who presented and published several articles on congenital pockets since 1985 and was the EFA 2015 Harry Reich Awardee, and I discussed the case. He thought the new pockets and endometriosis were related to a reactive and inflammatory reaction to biopsy of the area of stromal endometriosis at her first surgery. [\[HRI 26\]](#)



27. The red polyps from slide 26 have glands, stroma, and a fibrous stalk. [\[HRI 27\]](#)



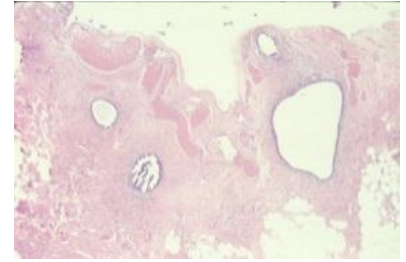
28. Hypervascularity associated with white appearing lesions is an uncommon finding. [\[HRI 28\]](#)

The histology is on slide #29.



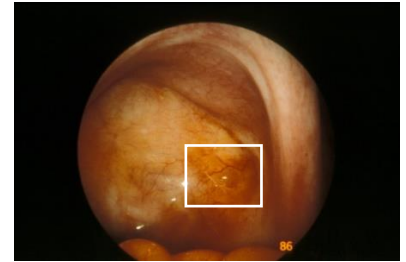
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29. In this slide, hypervascular surface peritoneum has glands seen beneath this. These glands have little or no stroma and a differentiation between endosalpingiosis, as in this picture, and endometriosis must be made at a histologic level. On a clinical level, there may be no difference in these two diseases. [\[HRI 29\]](#)



Clear, White and Brown Lesions

30. A small developing pocket is noted in the right lower cul-de-sac. At the upper and lower left of the pocket is are small clear lesions. [\[HRI 30\]](#) & [\[HRI 30b\]](#)



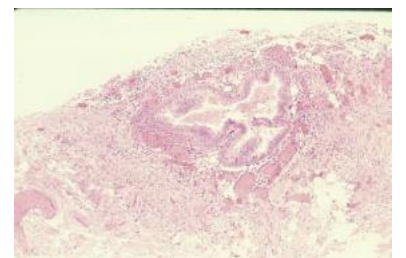
The clear lesions are circled in [\[HRI 30b\]](#).



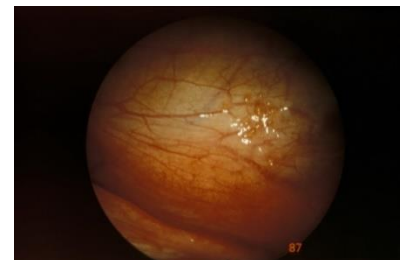
31. A section across the lesions in the rim of this pocket reveal that the whitish lesion is a small area of endometriosis and there may be stroma at the other margin. [\[HRI 31\]](#)



32. Secretion into this glandular structure has glands and scant stroma. [\[HRI 32\]](#)



33. White and brown vesicular lesions were more difficult to identify and were endometriosis, endosalpingiosis, psammoma bodies, granulation tissue, and inflammation. [\[HRI 33\]](#)

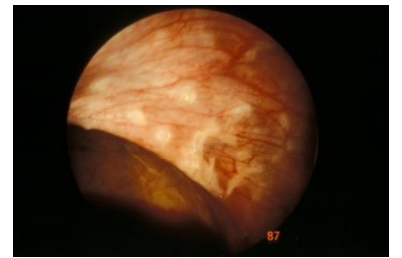


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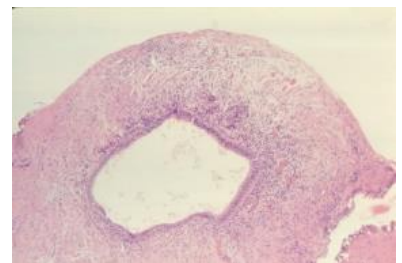
34. The angle of light inflection could be important in identifying lesions. In this slide, whitish looking lesions are difficult to see. The next slide shows a different light angle of this same section. [\[HRI 34\]](#)



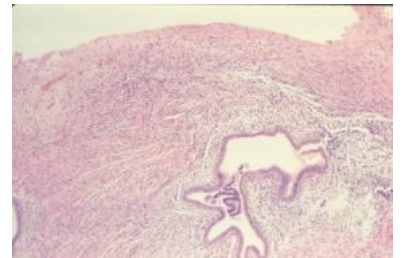
35. When the angle of the view was changed (slide 34), more lesions were seen. It is not uncommon that the angle of light on the lesions needs to be changed to see them. [\[HRI 35\]](#)



36. Some clear vesicles frequently are dilated glands with scant stroma within fibrosis. [\[HRI 36\]](#)



37. Some sections in the same patient show glands with prominent stroma. [\[HRI 37\]](#)



38. An uncommon histologic appearance was stromal edema in endometriosis seen as clear lesions. [\[HRI 38\]](#)

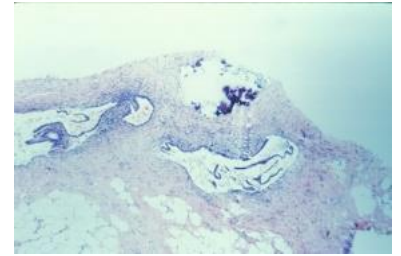


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39. Small whitish inclusions are most frequently psammoma bodies. On occasion these hide endometriosis. [\[HRI 39\]](#)

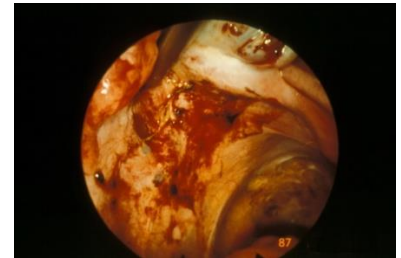


40. A psammoma body is seen on the surface hiding glands and stroma beneath it. The whitish appearance of the calcium deposits is more obvious than the underlying endometriosis. This can represent coexistent disease. [\[HRI 40\]](#)



Diffuse Infiltration

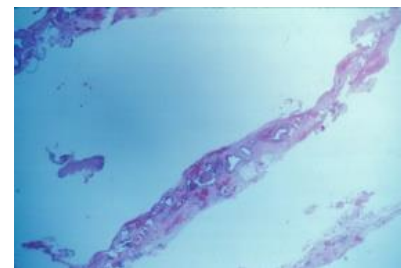
41. This field shows endometriosis and red adhesions covering the entire left broad ligament underneath the left tube and ovary. The left ovary is seen in the upper portion of the field and the left uterosacral at the depth of the field. Blackish areas of endometriosis are noted to the left. Reddish adhesions are noted in the center. Adhesions can hide endometriosis in 40% of the cases. [\[HRI 41\]](#)



42. Due to Sampson's 1921 data that endometriosis was not seen in 10 of 14 adhesions, the area was excised in its entirety by first opening the peritoneum away from the ureter and then pushing the ureter off with a blunt probe. Blunt probes protect the ureter. Fluid dissection is an alternate technique. If the ureter will not bluntly dissect away from the peritoneum, it is assumed that the endometriosis may be infiltrating into the ureter and this is not removed unless the patient has been preoperatively prepared for ureteral implantation. However, in most of the cases, as happened in this one, the ureter pushed away easily, and the broad ligament was excised. [\[HRI 42\]](#)



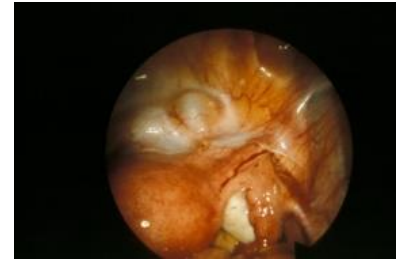
43. In this section of the reddish adherent area, endometriosis is seen infiltrating through the entire field. [\[HRI 43\]](#)



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Deep Infiltration

44. Endometriosis in this case involves the right round ligament and is pulling the tube toward that area. [\[HRI 44\]](#)
45. Dissecting this area with the CO₂ laser is performed and leaves a clean field. However, it is noted that excision went completely through the broad ligament. When tissue is distorted by endometriosis, surgeons must take care not to do damage to deeper levels of tissue. In this circumstance, this was noted during the dissection. Had this not been noted, it would have been easy to damage the ureter if it had been pulled into this lesion. In addition, closing this defect might decrease the chance of internal hernia. [\[HRI 45\]](#)



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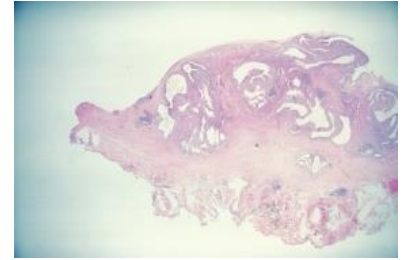
46. This right uterosacral ligament is interesting in two aspects. The first is that the brownish appearance that may be related to a positive Chlamydia culture from this surface. We can anticipate that endometriosis patients can have active Chlamydia. [\[HRI 46\]](#)
47. The second point regarding this lesion is that it goes much deeper than is apparent. It was palpably about 1 cm in diameter. [\[HRI 47\]](#)
48. After dissection, the dissection plane is almost to the level of the rectum near the lower are of the picture and the vagina in the upper margin. [\[HRI 48\]](#)



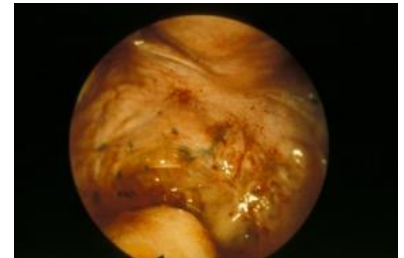
The histology is on slide #49.

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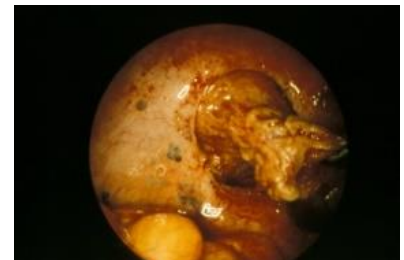
49. The size of this lesion is easily noted and had a depth of 7 mm toward both the rectum and vagina. Bipolar and thermal coagulation would have been inadequate to coagulate this lesion unless wide coagulation forceps had been used to completely enclose this lesion in the grasping jaws. Most bipolar and thermal coagulation jaws are not wide enough to completely encircle this lesion. In addition, lasers which coagulate to a depth of no greater than 0.4 to 4.2 mm would have been inadequate to coagulate this lesion. Destruction of this lesion requires vaporization or excision. [\[HRI 49\]](#)



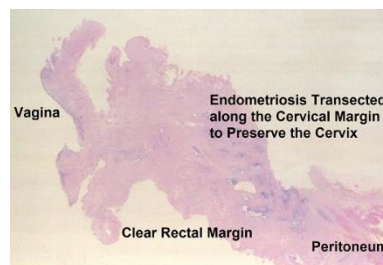
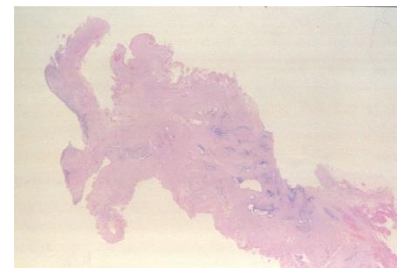
50. Diffuse endometriosis is seen in the cul-de-sac. The dark, fibrotic lesion at the center with a white, scarred appearing base was easily palpable on bimanual exam as a 2 cm nodule extending into the posterior vaginal fornix. [\[HRI 50\]](#) and [\[HRI 50b\]](#)



51. Laparoscopic dissection was taken to the level of the vagina. A probe in both the vagina and the rectum was used for recognition of these areas. Dissection into healthy fat separated the rectum. This type lesion can extend into or from the cervix (Donnez et al. 2019). The lesion was transected along the posterior cervical margin to preserve the posterior cervix. Once this area was developed, an incision was made directly through the vagina and the pneumoperitoneum was lost. The lesion was removed through the vagina. (Martin 1988) For complete removal of cervical endometriosis, a hysterectomy is likely better than creating an incompetent cervix or increasing the possibility of uterine rupture. (Ziadeh et al. 2020) [\[HRI 51\]](#)



52. The left side of the slide is the vaginal epithelium and the right is peritoneum. Endometriosis is noted infiltrating through the entire fibromuscular scar area. The area of the incision into the cervical margin is labeled. [\[HRI 52\]](#) and [\[HRI 52b\]](#)



[\[HRI 52b\]](#) areas labeled

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REFERENCES

- Badescu A, Roman H, Aziz M, Puscasiu L, Molnar C, Huet E, Sabourin JC, Stolnicu S. Mapping of bowel occult microscopic endometriosis implants surrounding deep endometriosis nodules infiltrating the bowel. *Fertil Steril* 2016, 105:430–4.
- Badescu A, Roman H, Barsan I, Soldea V, Nastasia S, Aziz M, Lucan M, Puscasiu L, Stolnicu S. Patterns of Bowel Invisible Microscopic Endometriosis Reveal the Goal of Surgery: Removal of Visual Lesions Only. *J Minim Invasive Gynecol* 2018, 25(3):522-527.e9
- Batt RE. Minimal endometriosis treatment and relationship to infertility. Presented at the Congress on Obstetrics and Gynecology, Beijing, June 19, 1985.
- Batt RE Duplications of the Müllerian System and Pelvic Endometriosis. First World Congress on Endometriosis, Clermont-Ferrand, France. 1986
- Batt RE, Smith RA. Embryologic theory of histogenesis of endometriosis in peritoneal pockets. *Obstet Gynecol Clin North Am.* 1989 Mar;16(1):15-28. PMID: 2664615.
- Batt, RE; Mitwally, Mohamed F. Endometriosis from: pathogenesis and prognosis, prevention and pedagogy. *J Pediatr Adolesc Gynecol.* 2003, 16: 333-347.
- Batt RE, Smith RA, Buck Louis GM, Martin DC, Chapron C, Koninckx PR, Yeh J. Müllerianosis. *Histol Histopathol.* 2007 Oct;22(10):1161-6. doi: 10.14670/HH-22.1161. PMID: 17616942.
- Batt RE, Yeh J. Müllerianosis: four developmental (embryonic) Müllerian diseases. *Reprod Sci.* 2013, Sep;20(9):1030-7.
- Brosens I, Gargett CE, Guo S.-W. Puttemans P, Gordts S, Brosens JJ, Benagiano G. Origins and progression of adolescent endometriosis. *Reprod Sci*, 2016, 23(10), 1282–1288. <https://doi.org/10.1177/1933719116637919> (open access), PMID: 27036950
- Buchweitz O, Poel T, Diedrick K, Malik E. The diagnostic dilemma of minimal and mild endometriosis under routine conditions. *J Am Assoc Gynecol Laparosc* 2003, 10:85-9.
- Donnez J, Dolmans M-M, Fellah L. What if deep endometriotic nodules and uterine adenomyosis were actually two forms of the same disease? *Fertil Steril*, 2019, 111(3):454-456, PMID: 30722943. DOI: <https://doi.org/10.1016/j.fertnstert.2018.12.018>
- Donnez, Jacques. Permission for slide [23c](#) Feb 25, 2019.
- Martin DC. CO₂ laser laparoscopy for the treatment of endometriosis associated with infertility. *J Reprod Med* 1985, 30:409-411.
- Martin DC. CO₂ laser laparoscopy for endometriosis associated with infertility. *J Reprod Med* 1986, 31:1089-1094
- Martin DC, Vander Zwaag R. Excisional techniques for endometriosis with the CO₂ laser laparoscope. *J Reprod Med* 1987, 32:753-758.
- Martin DC. Laparoscopic and vaginal colpotomy for the excision of infiltrating cul-de-sac endometriosis. *J Reprod Med* 1988, 33:806-808

- Martin DC, Hubert GD, Vander Zwaag R, El-Zeky FA. Laparoscopic appearances of peritoneal endometriosis. *Fertil Steril* 1989, 51:63-7.
- Martin DC, Ahmic R, El-Zeky FA, Vander Zwaag R, Pickens MT, Cherry K. Increased histologic confirmation of endometriosis. *J Gynecol Surg* 1990, 6:275-9.
- Martin DC, Redwine DB, Reich H, Kresch AJ. *Laparoscopic Appearance of Endometriosis, Second Edition*, 1991, Web Revision. 2017. Resurge Press, Richmond, Virginia. <http://www.danmartinmd.com/files/coloratlas1990.pdf>
- Martin D, Webb T, Lazarus E. Histologic confirmation of endometriosis may not be clinically useful (abstract). *J Min Invasive Gynecol* 2006, 13:s97.
- Roman H, Hennetier C, Darwish B, Badescu A, Csanyi M, Aziz M, Tuech J-J, Abo C. Bowel occult microscopic endometriosis in resection margins in deep colorectal endometriosis specimens has no impact on short-term postoperative outcomes. *Fertil Steril* 2016, 105:423–9.
- Sampson JA. Perforating hemorrhagic (chocolate) cysts of the ovary. Their importance and especially their relation to pelvic adenomas of the endometrial type ("adenomyoma" of the uterus, rectovaginal septum, sigmoid, etc.) *Arch Surg* 1921, 3: 245-323
- Wiegerinck MA, Van Dop PA, Brosens IA. The staging of peritoneal endometriosis by the type of active lesion in addition to the revised American Fertility Society classification. *Fertil Steril*. 1993 Sep;60(3):461-4. doi: 10.1016/s0015-0282(16)56161-5. PMID: 8375527.
- Ziadeh H, Panel P, Letohic A, Michel C, Amari S, Tristan G, Julien N, Resection of deep infiltrating endometriosis (DIE) could be a risk factor for uterine rupture: A case series with review of the literature, *F&S Reports* (2020), doi: 10.1016/j.xfre.2020.09.005.

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