Polypropylene mesh slings and cancer: An incidental finding or association?

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If polypropylene mesh slings were found to lead to malignancy, even in a small number of cases, it would lead to clear practice changes. The current report describes a case of clear cell carcinoma diagnosed in a patient who was also noted to have an exposed midurethral sling. Clear cell carcinoma is a rare tumor that can occur primarily within the urethra or the vagina. In the vagina it is often associated with in utero diethylstilbestrol (DES) exposure, while in the urethra the majority of such cancers are associated with a urethral diverticulum. The report by Lin et al. [1] describes a patient who presented with urinary retention and symptoms of a urinary tract infection (UTI) who was found upon examination to have mesh exposure in the vaginal fornix and an inflamed and tender anterior vaginal wall. She received a transvaginal tape obturator (TVTo) (Gynecare, Johnson & Johnson, Somerville, NJ, USA) 10 years earlier. The exposed mesh was excised, but within 2 months the vaginal wall was friable; ultimately, invasive clear cell carcinoma was diagnosed.

A second patient presented to one of the authors (PLD) with recurrent UTIs, dysuria, and a 3-cm paraurethral mass 14 months after placement of an Advantage midurethral sling

(Boston Scientific) and native tissue repair had been performed. She was diagnosed with squamous cell carcinoma, possibly of lower urinary tract or vaginal origin. Despite undergoing radical surgery, she died of the disease.

The interest in these cases is in the fact that there is a synthetic mesh sling in close proximity to a malignancy. Recently, some authors have suggested that polypropylene mesh could be carcinogenic [2]. The science behind this suggestion is weak, and to date no cases have been reported. Yet, if a cause-and-effect pattern to the current report could be established, it would be cause for concern. However, there are a number of reasons that exposed mesh is likely an incidental finding in a patient presenting with clear cell carcinoma:

1. With almost 20 years of commercial availability, this is the first published case report of direct proximity of a malignancy to a midurethral polypropylene sling. One would expect that if this were a genuine problem, we would be seeing more of such cancer cases given the millions of women with these products inserted. Of course, one might respond that this is the tip of the iceberg and more will appear; time will tell, but it seems unlikely.
2. Tens of millions of patients have undergone surgery with polypropylene implantation (suture, meshes, etc.) without there being any prior report of clear cell carcinoma developing.
3. Even researchers who suggest a risk of oncogenicity based on animal models have only noted the potential for sarcomas.
4. Presenting symptoms of the patient reported here—urinary retention—is not consistent with exposed mesh but is more consistent with a rapidly enlarging pelvic tumor.

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She may have had exposed mesh for years, and it was only discovered because of her urinary symptoms.

5. Other literature, albeit with shorter average follow-up, has not noted any association between these slings and malignancy [3].
6. Given the millions of women with these slings, it is inevitable some will develop malignancies, just as do some women without slings.

In all likelihood this patient had asymptomatic mesh exposure and developed clear cell carcinoma. Given the length and breadth of experience with polypropylene midurethral slings, it is likely an incidental finding. However, the possibility of an association has been raised, and vigilance is thus required. To take this further, more than case reports of associations between cancer and the use of polypropylene mesh is needed. A significantly increased risk of cancer in women who have

these implants must be demonstrated compared with the general population in a large cohort of women. On current evidence we believe we should continue to reassure our patients of the low risk of carcinogenicity with polypropylene grafts.

References

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