a pure Gleason score of 4 + 4 = 8. Each core should be assigned a separate Gleason score, especially in cases with high Gleason score cancer on at least 1 core.

Editorial Comment

In our Institution each core with prostate cancer is assigned a separate Gleason score, e.g., slide #1: normal prostatic tissue; slide #2: focal atrophy; slide #3: adenocarcinoma Gleason 4 + 4 = 8; slide #4: adenocarcinoma Gleason 3 + 3 = 6; slide #5: focal atrophy; and, slide #6: normal prostatic tissue. This paper answers a frequent question by the urologist. Why assign each core separately instead of an overall Gleason score? In our example the overall Gleason score would be 4 + 3 = 7. Kunz and Epstein answer this question. A Gleason score of 4 + 4 = 8 with pattern grade 3 in other cores had a more advanced stage than a pure Gleason score of 4 + 3 = 7 (p=0.008) and the group with a Gleason score of 4 + 4 = 8 and Gleason pattern grade 3 on other cores had a higher overall grade on radical prostatectomy than the group with a pure Gleason score of 4 + 3 = 7 (p=0.001). The authors conclude that each core should be assigned a separate Gleason score, especially in cases with high Gleason score cancer on at least one core. We fully agree with this conclusion and highly recommend urologists to ask from their pathologists to grade separately each core in case the pathology report is given as an overall Gleason score.

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INVESTIGATIVE UROLOGY

Reperfusion injury of the rat bladder is worse than ischemia

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Purpose: Previous studies have demonstrated that in vivo and in vitro ischemia of the bladder results in decreased contractile responses. However, to our knowledge the effect of reperfusion following ischemia of the bladder is not known.

Materials and Methods: Adult male rats were subjected to bilateral bladder ischemia and varying periods of reperfusion. In vivo ischemia was created for 4 hours by reversibly clamping the 2 vesical arteries for 4 hours. Reperfusion was produced by removing the clamps and allowing the animals to recover for 1 day, 1 week or 1 month after surgery. Following recovery bladders strips were studied using field stimulation (FS), carbachol and KCl. The maximal contractile response and rate of response generated were recorded digitally and analyzed.

Results: The maximal responses to FS, carbachol and adenosine triphosphate (ATP) were not decreased by 4-hour ischemia alone, whereas the response to KCl was decreased significantly. The contractile responses

to FS and KCl were significantly decreased after 1 day and 1 week of reperfusion. Responses after 1 month of reperfusion were increased significantly compared with responses after 1 week of reperfusion. The responses to ATP were not affected by ischemia or reperfusion. The contractile response to KCl was significantly more sensitive to ischemia than the responses to carbachol, ATP or FS, whereas the contractile response to FS was significantly more sensitive to reperfusion than the other forms of stimulation.

Conclusions: This study demonstrates clearly that injury by reperfusion following ischemia is more detrimental than the effects of ischemia alone and FS contraction is the most sensitive form of stimulation to reperfusion damage. This study also demonstrates the ability of the bladder to recover from ischemic and reperfusion injuries.

Editorial Comment

This is a welcome research work on ischemia/ reperfusion injury in urogenital organs. There is increasing evidence suggesting that specific urinary tract dysfunctions are related directly to bladder smooth muscle hypoxia and ischemia. Despite recent understanding of the destructive effects of ischemia the importance of reperfusion injury to the bladder remains unclear. The authors clearly demonstrated that reperfusion injury was more detrimental to neurogenic stimulation than ischemia alone. Also, this study provides evidence that the bladder is able to recover from ischemic and reperfusion injuries.

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The impact of prenatal androgens on vaginal and urogenital sinus development in the female mouse

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Purpose: In females abnormal urogenital virilization can occur secondary to prenatal exposure to exogenous or endogenous androgens. We studied the effects of different doses of prenatal androgens on urogenital sinus development and the location of the vaginal confluence in a mouse model.

Materials and Methods: Timed pregnant C57/6 mice were exposed to 2, 5 and 10 mg testosterone propionate on gestational days 14 through 18. On gestational day 19 the genital tubercles and internal genitalia were examined grossly and histologically for the presence of virilization. Three-dimensional computer reconstruction was done and plastic cast injection molds of the urogenital sinus were made in select specimens.

Results: Microscopic analysis confirmed the spectrum of virilization, which occurred in 98% of testosterone propionate treated female fetuses. Plastic cast injection showed that affected females had a longer urogenital sinus, more proximal confluence and shorter vagina in a dose dependent manner. Histological sections and 3-dimensional reconstruction revealed that the bladder neck moved proximal under the pubic bone, also in a dose dependent manner.

Conclusions: Prenatal exposure to increasing levels of androgen causes urogenital sinus elongation in a female mouse fetus. In the mouse model the confluence area moves proximally together with the bladder neck in a dose dependent manner.

Editorial Comment

It is well known that the development of the male and female internal and external genitalia is dependent on a complex interaction of specific androgenic and nonandrogenic hormones. In this elegant experimental morphological study, the authors analyzed whether the level of the vaginal confluence with the urogenital sinus moves proximal from perineum to bladder neck as a function of prenatal androgen exposure in a mouse model.

The authors found that prenatal exposure to increasing levels of androgen causes a dose dependent change in the confluence of the urogenital sinus and vagina. They observed in this mouse model, a distal elongation of the common urogenital sinus and proximal migration of the bladder neck in respect to the fixed bony structures of the pubic arch. Although the molecular basis of urogenital sinus elongation and migration remains unexplained, the authors speculated that the complex hormonal environment found in patients with congenital adrenal hyperplasia or other abnormalities leading to androgen excess can result in wide spectrum anatomical variations of the vaginal confluence in the urogenital sinus.

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RECONSTRUCTIVE UROLOGY

Robotic assisted laparoscopic sural nerve grafting during radical prostatectomy: initial experience

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Purpose: Sural nerve grafting has been done in select patients undergoing radical prostatectomy with unilateral or bilateral wide excision of the neurovascular bundle in an effort to preserve potency. We describe a novel technique of laparoscopic sural nerve grafting after radical prostatectomy using the da Vinci (Intuitive Surgical, Mountain View, California) robot.

Materials and Methods: The procedure was performed successfully in 3 potent men 48, 49 and 59 years old, respectively. In patient 1 the entire procedure was performed robotically using a 6 port transperitoneal approach. In patients 2 and 3 the robot was used only for sural nerve grafting and urethrovesical anastomosis, while radical prostatectomy was performed by conventional laparoscopy. After the completion of radical prostatectomy with deliberate wide resection of the 2 neurovascular bundles in patients 1 and 3, and unilateral excision of the left neurovascular bundle in patient 2 a plastic surgery team harvested 10 to 15 cm of sural nerve from the left calf. Sural nerve grafts were interposed robotically by placing 4 to 6 interrupted perineural stitches of 6 or 7-zero polypropylene sutures.

Results: Mean operative time was 6.5 hours, mean blood loss was 216 cc and mean hospital stay was 2.3 days. Surgical margins were focally positive at the apex in the patients 1 and 3. During a followup of 7, 5 and 1 months patient 1 reported penile engorgement with sildenafil not sufficient for penetration, patient 2 with unilateral nerve preservation was potent without any medication and patient 3 did not achieve any degree of erection, respectively.