

# Periurethral Abscess Formation due to *Neisseria gonorrhoeae*

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## Key Words

Gonorrhea · Abscess · Urethra

## Abstract

Abscess formation secondary to chronic urethritis of the posterior male urethra caused by *Neisseria gonorrhoeae* has become an atypical and rare urological complication. Periurethral abscess formation has been reported to be associated with gonococcal infections, but in such rare cases a delay in the diagnosis of gonococcal infection seems to have been the cause for this periurethral complication. A case with a primary diagnosis of periurethral abscess with *N. gonorrhoeae* infection is reported – successful treatment included transurethral incision and antibiotic therapy.

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In the era of modern antibiotic treatment, abscess formation secondary to chronic urethritis of the posterior male urethra caused by *Neisseria gonorrhoeae* has become an atypical and rare urological complication [1]. Periurethral abscess formation has been reported to be associated with gonococcal infections [2, 3], but in these rare cases a delay in the diagnosis of gonococcal infection seems to have been the cause for this periurethral complication [4]. Here we report on a case with a primary diagnosis of

periurethral abscess with *N. gonorrhoeae* infection. Successful treatment included transurethral incision and antibiotic therapy.

## Case Report

A 54-year-old male presented with symptoms of periurethral abscess formation. The patient reported a bagatelle penile trauma 1 week before with symptoms starting after the injury. Sexual intercourse related to the injury and a history of sexually transmitted disease was denied. There was no voiding dysfunction, no hematuria and no urethral discharge. HIV testing was negative. On examination the patient had ventral cutaneous soft tissue edema of the penis with marked inflammatory urethral node formation of approximately 3 cm diameter in the distal pars pendulans. Urethral discharge before and after gentle pressure on this area was absent. Digital rectal examination was normal. First voided urine was sterile and contained a few leukocytes in the sediment. A Gram-stained urethral smear was negative for diplococci and leukocytes. Penile ultrasonography (10 MHz, Kraetz<sup>®</sup>) showed a periurethral hyporeflexive area distal the pars membranacea with questionable communication to the urethra. To clarify the relationship to the urethra, we performed sonourethrography [5] with retrograde saline infusion into the distal urethra. This demonstrated formation of a periurethral abscess with a hypoechogenic cavity distally, a possible communication to the urethra and a luminal narrowing of the urethra consequent to the abscess in the direction of the bladder. The corpora cavernosa were not affected (fig. 1). The patient received perioperative antibiotic prophylaxis with a bolus of cephalosporins and aminoglycosides. A surgical incision using a Turner-Warwick hook was performed under slight palpatory pressure, resulting in expulsion of purulent material from the abscess formation which had been previously sonographi-

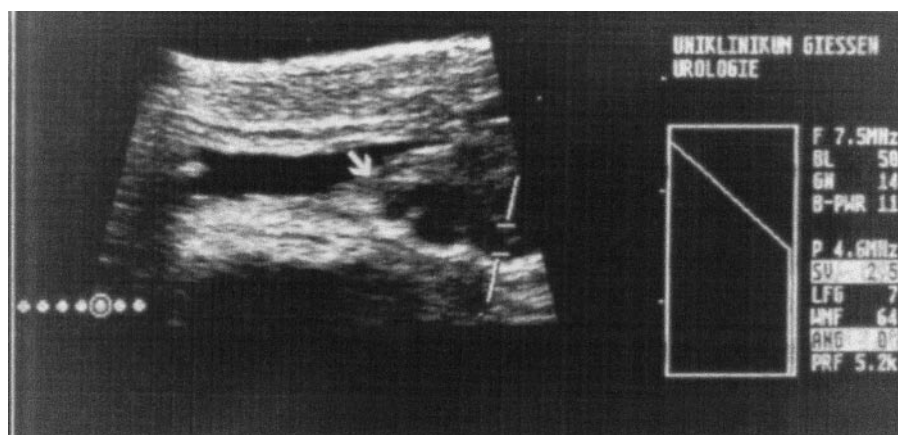
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0042–1138/04/0734–0358\$21.00/0

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**Fig. 1.** Sonourethrography of the urethra. Questionable urethral opening to the abscess formation is marked (see arrow).

cally identified. From this material a smear for Gram stain, bacterial culture and ELISA analysis (Gonozym®) [6] for the presence of gonococci was performed. The results showed that cultures for normal bacteria, mycoplasma and fungi were sterile, there was no evidence of *Chlamydia trachomatis* (culture, LCR), but Gonozym® test was positive. The smear revealed necrotic leukocytes and intracellular Gram-negative diplococci. A suprapubic catheter was placed into the bladder immediately after opening the abscess.

## Discussion

In the pre-penicillin era, formation of periurethral abscesses was associated with a history of gonococcal urethritis as a typical ascending complication. Today, the most common microorganisms causing urethritis are Gram-negative rods, enterococci, anaerobes and less frequently staphylococci and streptococci [2]. In immunocompromised patients, infections with *Staphylococcus epidermidis* and *Pseudomonas aeruginosa* are more frequent. Complications of gonococcal urethritis, such as paraurethral abscess formation and persistent infections of the paraurethral glands, are considered to occur only rarely [3]. Hypothetically, all openings of ducts of the paraurethral glands located bulbourethral (Cowper's) or along the whole penile urethra (Littre's) might be affected [3]. There are, however, very few reports of patients with symptoms of chronic infection after urethritis and who demonstrate structural abnormalities in the posterior urethra [7, 8] with the observation of paraurethral gland dilatation [9].

Periurethral abscesses usually result directly from an infection of the urethral tissue, with extravasation of the infected urethral material or urine serving as the pathogen vehicle [2]. Typical risk factors are persistent urinary tract

infections, indwelling catheters, undetected obstruction and trauma to the urethra [2]. Alternatively, penile cutaneous infections may occasionally spread to the deeper tissue [10]. In this reported case, the patient recalled bagatelle trauma alone and denied any history of urethral infectious symptoms, so that our diagnostic procedures were not primarily targeted for a sexually transmitted infection.

Clinically, the penile swelling with node formation periurethrally was the first hint favoring the diagnosis of a periurethral abscess. Following published recommendations [5], we prefer to perform urethral sonography under retrograde filling of the urethra rather than retrograde urethrogram in such cases and regard this technique as the optimal method in identifying not only urethral narrowing but also urethral tissue deformations [5]. Unfortunately, it was impossible to localize a distal periurethral gland from which the disorder might have originated, although the localization of the abscess distal to the pars membranacea is suggestive of a focus in Littre's glands, rather than Cowper's. In our opinion, other imaging procedures, such as penile CT scan, do not provide any further information for clarifying this question.

As therapy, a percutaneous needle aspiration has been suggested as the first step and provides material for Gram's stain and bacteriology. In the case of periurethral localization, however, we favor a transurethral procedure with incision of the urethral wall as the simpler and more efficient procedure to evaluate the periurethral abscess cavity. Simultaneously, suprapubic urinary diversion is necessary and intravenous antibiotic prophylaxis must be commenced preoperatively [2] to prevent the development of sepsis which has been observed in a few cases of surgical intervention of periurethral abscess [10]. The

antibiotic regimen proposed by Walther et al. [2] using cephalosporins and aminocyclotrimethoprim is effective against most of the Gram-negative bacteria mentioned above. In this case we received a positive gonococcal ELISA result 1 day post-operatively and then changed the therapy to cefuroxime 1.5 g i.v. per day for 7 days. The patient

became symptom-free 24 h after starting therapy. Investigations 4 weeks later showed no evidence of urethral abnormalities under sonography, a peak flow of 44 ml/s and no leukocytes in the first voided urine, thus giving no evidence of recurrent abscess formation, although this has been reported in 12 of 63 patients in the literature [2].

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