Inflammation

Pathology

Due to its high incidence, inflammation of the prostate is a significant clinical problem which still has not been clearly defined. Prostatitis is a generic term which may be misused in daily practice and offered as a diagnosis based solely on clinical findings without precise data from the physical examination. In an attempt to clear up some of the confusion regarding painful benign conditions of the prostate and to create a common terminological framework, in 1978 Drach proposed a classification based on clinical and laboratory findings which is still valid:

- acute bacterial or viral prostatitis (and prostatic abscess);
- chronic bacterial prostatitis, usually secondary to an incompletely eradicated acute form;
- chronic nonbacterial prostatitis, characterized by no history of urinary infection and constant sterility of the prostate secretions, which is puruloid due to the presence of macrophages;
- prostatodynia, a condition similar to the chronic inflammatory form but with no history of urinary infections and normal prostatic secretions.

**Acute prostatitis** can manifest with massive congestion, edema and suppuration of the entire gland or with small and disseminated abscesses or with broad areas of liquified necrosis. When these characteristics are diffuse there follows an increase in volume of the prostate, which proves to be soft and tender. The typical histologic features relate to the duration and intensity of the inflammation and range from a slight stromal infiltrate of lymphocytes to leukocyte collections in the glandular lumen, even to the point of necrosis. Inflammatory episodes may undergo complete regression with scarring, or conversely become chronic with obstruction of the excretory ducts allowing infection to continue in small abscesses.

**Chronic prostatitis** is characterized by an inflammatory process represented by numerous lymphocytes, plasma cells, macrophages and neutrophils. Aggregates of lymphocytes may also be found in the prostate of elderly subjects without the presence of chronic inflammation, given the absence of pathognomonic cells of infection (macrophages and leukocytes).

**Granulomatous prostatitis**, a sequela of acute and chronic forms, is characterized by thickening of the prostate secretions, marked focal lesions consisting of a large nodular infiltrate of epithelioid histiocytes mixed with leukocytes, lymphocytes, plasma cells and multinucleated giant cells. These granulomas contain neither foci of caseation necrosis nor acid-resistant bacteria, both of which are present when granulomatous prostatitis is supported by a tubercular process that is almost always secondary to an infection of another part of the urogenital system (usually the urinary bladder or kidney).
Diagnostic Imaging

Acute Prostatitis and Prostatic Abscess

Acute bacterial or viral forms of prostatitis are distinguished by clear clinical symptoms: rapid onset of fever with chills, perineal, testicular and penile pain, dysuria (frequency, nocturia, obstructive urinary tract syndromes). Upon palpation the prostate is boggy and extremely tender, while the urine is rich with bacteria and leukocytes. In the presence of such clear findings an ultrasonography (US) is rarely indicated and only if there is suspicion of prostatic abscess. In fact, despite being clinically easy to diagnose, acute prostatitis is often completely silent at US. In general, the shape and the symmetry of the gland are well defined, while the echogenicity is lower than normal, particularly in the central periurethral region. The borders of the gland are well defined with an increase in the vasculature of the periprostatic adipose tissue. However, a loss of definition of the profile is not rare, produced by foci of inflammation mimicking the capsular and extracapsular invasion of carcinoma. Multiple irregularly distributed hypoechoic areas are often found, particularly in the McNeal peripheral zone.

In contrast, US can play an important role in the early diagnosis of a prostatic abscess. Abscesses are rarely primary and generally a late complication of acute prostatitis in subjects with lowered immune systems (patients suffering from diabetes, uremia, immunosuppression) who undergo repeated urethral catheterization. The abscess collections tend to spontaneously drain into the urethra, the rectum and the periprostatic adipose tissue. The symptoms are often masked, with moderate fever, recurrent urinary infections, epididymitis, dysuria and perineal pain. Palpation is often negative. A rare finding is fluctuation caused by the fluid under tension in the cavity of the abscess.

At US the abscess appears in an early phase as an anechoic heterogeneous lesion with fine intraluminal echoes produced by necrotic tissue and fibrin deposits. The margins, which initially are well defined, become progressively irregular (Fig. 11.1). If left untreated, the inflammation tends to involve the entire gland, which turns into an abscess sac. US is able not only to diagnose but also to guide drainage of the collection with the successive necessary controls (cell and microbiologic culture). The study can also guide the needle for antibiotic lavage and, where necessary, document the presence of fistula with contrast medium.

![Image](image_url)

**Fig. 11.1.** Ultrasonography. Transrectal approach. Acute prostatitis with abscess formation. Sonogram shows a heterogeneous and prevalently hypoechoic area due to necrosis in the left lobe with absence of vasculature at power Doppler (asterisk)