Percutaneous Nephrostomy in Obstructive Uropathy

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Since the original description by Goodwin in 1955, percutaneous nephrostomy (PNS) has assumed an important role in the management of obstructive uropathy. It was initially devised as an alternative to operative nephrostomy, but has now completely replaced the latter, for the following good reasons:

1. It can be done under local anesthesia.
2. It provides effective urinary drainage.
3. It carries an acceptable risk, with low morbidity and practically no mortality.

Percutaneous nephrostomy provides supravesical urinary diversion, as well as access for various endourologic manipulations of diagnostic or therapeutic nature. Therapeutic applications of percutaneous nephrostomy are:

1. Decompression in postrenal obstruction
2. Diversion in urinary fistulas
3. Endourologic manipulations

Technique

Basically there are two types of puncture technique for PNS, the Seldinger (catheter over guide wire) technique and the trocar technique. The Seldinger technique uses a guide wire for catheter insertion [4, 9] whereas the trocar cannula permits direct introduction of a large-bore drainage tube without guide wire and further dilatation [7]. In an obstructed pyelocaliceal system the two techniques give identical results. In the absence of dilatation, however, fine-needle puncture and subsequent catheter insertion by the Seldinger technique seems to be more advantageous. The method used by us is depicted in Fig. 1. The fine-needle technique has the following advantages:

1. It permits several puncture attempts without major damage to the kidney.
2. Puncture of the nondilated pyelocaliceal system is facilitated.

The preferred catheter for initial decompression is a 5F PVC or polyethylene catheter. If pus or thick fluid must be drained an 8- to 10F catheter is used (Fig. 2).

Renal Localization

The methods available for localization of the kidney are (a) ultrasound, (b) fluoroscopy, and (c) computed tomography (CT). CT is basically unnecessary for localization of the kidney. The combination of real-time ultrasound guided puncture and fluoroscopic catheter placement can in our opinion not be bettered. In the absence of dilatation, additional intravenous contrast medi-
Fig. 2a–c. Possibilities of catheter placement in PNS. a Renal pelvis; b upper calix; c proximal ureter

um is administered for visualization of the pyelo-calceal system.

$Patient\ Position$

A variety of positions have been advocated for PNS in the literature, including prone, supine, lateral and supine oblique. The prone position is the one mostly employed, but if this is not tolerated by the patient the supine oblique position is used.

$Puncture\ Success\ and\ Complications$

Successful puncture can be achieved in more than 96% of cases irrespective of the method used (ultrasound or fluoroscopy). The rate of major complications amounts to 4%, bleeding being the main problem. In our series of more than 500 PNS procedures no deaths occurred.

$Decompression\ in\ Postrenal\ Obstruction$

Percutaneous nephrostomy can be applied as an emergency, intermediate, or palliative procedure. The original function of PNS was as an emergency decompression for severely ill patients with postrenal obstruction complicated by fever, sepsis, and uremia, which were the classic indications for operative nephrostomy. The aims of