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Treatment of kidney and ureteral stones in children using pneumatic lithotripter and holmium laser

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Description

ESWL is presently regarded as the primary therapy for kidney stones. The need to repeat the surgery exposes the kids to rehospitalisation's and the hazards of anaesthesia, which contributes to the technique's poor effectiveness, especially in patients with congenital urinary system abnormalities. The Landau team reported that while 20% of patients required reoperation, SFR was 80% three months after ESWL. Endoscopic lithotripsy has an SFR effectiveness of up to 97% and was first utilised for urolithiasis of the distal ureter.

As technology and personnel expertise increased, it began to be utilised to treat stones found in the other regions of the ureter with an SFR of 88 to 100% and few problems. No ureter wall damage was observed, however one postoperative episode of ureteral stenosis was effectively treated endoscopically. The requirement for vesicoureteral orifice dilation and, consequently, the danger of developing iatrogenic vesicoureteral reflux, were reduced as a result of equipment miniaturisation. In 91% of them, the deposits completely disintegrated, and just 9% required additional surgery.

One case of ureteral obstruction necessitated surgery, whereas 4.2% of cases involving ureteral perforations were successfully treated with a temporary ureteral stent. We draw the conclusion that endoscopic treatments utilising either a pneumatic lithotripter or a holmium laser are both safe, with a similar number of clinically insignificant problems, in both the URSL and RIRS approaches, based on the findings of our observations. There were no statistically significant variations in the number of problems between the two groups. A statistically substantial reduction in procedure time in this group of patients is one obvious benefit of the laser.

The one reported case of a serious complication that resulted in significant damage to the ureter wall cannot be examined in terms of the tools used, but rather in terms of the risk connected with the endoscopic approach as a whole. A low percentage of vesicoureteral reflux was discovered, followed by spontaneous regression, as a result of the meticulous placement of the ureterorenoscope into the ureteral orifice and the decision to forego using the access sheath in the patient groups under discussion.

There was no iatrogenic ureteral stricture detected in either group of patients during the postoperative period, which was confirmed by IVP or contrast enhanced CT in patients with chronic upper urinary tract blockage. In patients without a recognised obstruction, the likelihood of ureter stricture is modest. As ureterorenoscope lithotripsy became more widely used as a first option for treating urolithiasis, reports on its great efficacy

started to cast doubt on ESWL's standing. With big concretions, staghorn, cystine, and radiolucent stones, the ESWL's usefulness is rather limited.

The benefits of the URSL are especially pronounced for deposits detected in the lower ureter since the pelvic bones' presence restricts external generator wave penetration to the plaque. In relation to the size of the stone, URS's advantage is also shown. Due to endoscopic lithotripsy's high effectiveness, attempts have been made to employ it to treat ureteric deposits.

In our opinion, the benefit of endoscopic approach over ESWL, which is particularly noticeable in the SFR values obtained after the first treatment compared with ESWL, justifies performing the procedure under general anaesthesia.

The patients with congenital anomalies are of particular interest in the evaluation of the effectiveness of endoscopic procedures in the treatment of nephrolithiasis in children. Three types of congenital anomalies, including primary megaureter, main vesicoureteral reflux, and ureterocele, were discovered in our group. No one of these problems appeared to have a direct impact on the outcomes of the endoscopic treatments, according to our data. As the endoscope removes the obstruction and the disintegration of deposits and their extraction from the urinary tract are carried out under visual supervision, the outcomes in the case of patients with ureterocele were also unaffected.

Based on our data, it was determined that ureterorenoscopic lithotripsies using laser or pneumatic technology are both safe, with a similar, clinically negligible percentage of problems in URSL and RIRS. There was no statistically significant difference in the quantity of complications between the two groups. The laser's advantage is that patients who get this type of radiation have much shorter operating times. The one case of serious complication that was reported involved substantial damage to the ureteral wall and should not be seen in terms of the tools employed but rather in terms of the inherent dangers of endoscopy.

Conclusion

In comparison to the treatment using pneumatic lithotripters, the employment of holmium lasers for the disintegration of stones shortens the operation and improves treatment effectiveness, especially in the case of Renal Stones (RIRS). In the hands of skilled practitioners, the use of a ureterorenoscope is a highly effective and secure way for treating urolithiasis in children, for both the location in the ureter and the kidney.