HORIZON

Asymptomatic Lower Calyceal Renal Calculi- To Treat or Not To Treat

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Introduction

Management of urinary stone forms the bulk of the urological practice in India (1). Management of the renal stone has under gone dramatic change from the era of open surgery i.e first planned nephrolithotomy by Ingalls 1879 (2) to the present era of minimally invasive retrograde intra renal surgery (RIRS) (3). Overall incidence of lower pole calyceal stones is variable ranging from 12.9% to 70% (4,5,6).

When Not to treat ?

Asymptomatic nonobstructing lower caliceal renal calculi are usually detected incidentally. Hence when open surgery is the only option, conservative approach is followed visa a vis intervention. This is because the open surgery for renal stone is associated with higher morbidity. However, in the present era open stone surgery is reserved only for complex renal stones, failure of extracorporeal shock-wave lithotripsy or endourological treatment and in those with concomitant anatomical abnormalities (such as ureteropelvic junction obstruction and infundibular stenosis with or without renal caliceal diverticulum) (7).So when someone is detected with such stones and only open surgery is available as modality of treatment one needs to think.

Why to Treat?

Progressively increasing stone size, localized obstruction, associated infection and/or chronic pain necessitate the need for intervention in such patients. Hubner *et al* (4) in their retrospective study were the first to highlight the drawbacks of the conservative management as they noted that 83% of all caliceal stones required intervention within 5 years of diagnosis. In their study they also inferred that if the lower caliceal stone had not passed spontaneously within the first five years it was unlikely to do so. Glowacki *et al* (6) reported that the cumulative 5-year probability of a symptomatic event was 48.5% and so they recommended prophylactic treatment for lower calyceal calculi to prevent renal colic, hematuria, infection, or stone growth. Similar observations were made by Emrah Yuruk *et al* (8), during their 19.4+ 5.7-months follow-up of 32 patients in whom 25% had a stone related event. In addition, Burgher *et al* (9) documented the natural history of asymptomatic stones with a 3.36-year followup. They observed progression in 77% of patients and 26% in their series required surgical intervention. Murphy *et al* (10) in their series have recommended prophylactic treatment for lower caliceal asymptomatic renal calculi of >1cm size as they observed that there is a 47% chance of these stones becoming symptomatic within two years. Thus, reinforcing the need to treat such stones.

How To Treat

Various modalities of management for asymptomatic , nonobstructing lower calyceal calculi have been followed ranging from PCNL (Per Cutaneous Nephro Lithotripsy), ESWL (Extra corporeal Shock Wave Lithotripsy), to RIRS.

Optimal Treatment

Optimal management for asymptomatic lower calyceal stone disease continues to be an area of controversy as there is no comprehensible consensus on the appropriate management modality for such stones (11).

ESWL has been increasingly used for these stones to decrease the risk of complications and the need for invasive procedures. However the use of ESWL has it's own inherent problems secondary to the complex anatomy of the lower pole calyx thus affecting the outcome. This has been reinforced in number of studies which have studied the anatomy and out come of the ESWL in cases of lower pole calculi (11,12,13).Also the size and composition of the stone and out come of ESWL has been studied . In the initial report of the Lower Pole Study Group, the overall SWL stone-free rate was 37% at 3 months (15). When stratified by size, the stone-free rate for stones less than 10, 11 to 20 and 21 to 30 mm was 63%, 23% and 14%, respectively. This clearance rates are much lower than that achieved by other treatment modalities.

PCNL as a modality for lower pole stone management has an advantage of better clearance rates than any other modality with a drawback of being more invasive (16). The advantage of PCNL is that the it's success is independent of the lower pole calyceal anatomy and the stone size (17). In Lower Pole Study 1 a 100%, 93% and 86% stone-free rate was reported for PCNL for stones smaller than 1, 1 to 2 and larger than 2 cm, respectively (15). This was achieved with marginally higher morbidity

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in the form of longer hospital stay and higher complication rates. Similar clearance rates with PCNL and low complication rates (blood transfusion 3.2%) were reported by Emrah Yuruk *etal* (8). Thus, reinforcing PCNL as the modality of treatment for such stones. RIRS is also being increasingly used as definitive minimally invasive option for the management of lower calyceal stones. Especially, when the stones co-exist with coagulopathy, or in patients with concomitant renal and ureteral stones. Also, stones in lower calyx in patients with renal anomalies not amenable to ESWL or PCNL eg: ectopic pelvic kidney are preferably and effectively treated with RIRS.

Kourambas and associates (18) reviewed a series of 34 patients with 36 lower pole calculi treated through a retrograde approach. Twenty-six stones were fragmented in situ in the lower pole, whereas 10 calculi were moved to a more favorable position in the collecting system. The stone-free rate of patients who were treated with stone displacement before fragmentation was 90% compared with a stone-free rate of 83% for those patients who underwent in situ fragmentation. Schuster *et al* (19) reported a 77% stone-free rate for patients with lower pole calculi smaller than 1 cm treated in situ versus an 89% stone-free rate for those treated with displacement first. However, the results were not favorable for the stones>20mm, with clearance rates of 29% only. Cannon *et al* (20) reported a clearance rate of up to 93% in there series of 21 patients with lower caliceal stones of 12 mm size treated with RIRS. Though, RIRS has advantage of lesser morbidity(bleeding complications,trauma to adjoining organs,hospital stay) in comparison to PCNLbut it has some inherent drawback which include the effect of the stone size and lower pole anatomy on the immediate clearance rates, cost of the procedure, endoscope fragility and learning curve involved. All these should be considered before offering this as a treatment option.

Conclusion

Asymptomatic lower pole calculi should be treated. However, The optimal approach for management of patients with lower pole stones is still evolving. Stone size, composition, and lower pole anatomy should be considered in recommending a treatment modality for these patients. ESWL is a reasonable consideration for individuals with lower pole stones of 1 cm or less in aggregate size. Patients with lower pole stones of 2 cm or more are best treated with PCNL. However, the controversy regarding treatment of lower pole stones is limited to stones of 10 to 20 mm in diameter. PCNL, RIRS, and ESWL are all acceptable options. Nevertheless, patients with an acute lower pole infundibulopelvic angle (i.e those with unfavorable anatomic features),and failed ESWL treatment, should be treated primarily with PCNL or RIRS.

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