



E-ISSN: xxxx-xxxx

P-ISSN: xxxx-xxxx

IJCRRS 2019; 1(1): 07-08

Received: 12-11-2018

Accepted: 15-12-2018

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Multiple kidney stones managed with surgery- A case report

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Abstract

Kidney stone disease has been well known since ancient times. Many calculi are formed and passed without causing symptoms. A kidney stone is a hard, crystalline mineral material formed within the kidney or urinary tract. We reported a case of right renal stones treated surgically.

Keywords: Kidney stones, crystalline, mineral, Surgery

Introduction

Renal calculus derived its name from the Latin *rēnēs*, meaning "kidneys" and calculus meaning "pebble". It is a solid or crystal aggregation formed in the kidneys from minerals in the urine. Many calculi are formed and passed without causing symptoms^[1]. A kidney stone is a hard, crystalline mineral material formed within the kidney or urinary tract. Kidney stones form when there is a decrease in urine volume and/or an excess of stone-forming substances in the urine^[2].

Kidney stone disease has been well known since ancient times. Before the endourology era, the main approach has relied on conservative surveillance or open stone removal^[3]. Since the technical advancements of surgical instruments and the evolvement of the main clinical approach to stone disease through endourologic options, contemporary management of the disease consists mainly of minimally invasive techniques. Open surgery for most urinary stones currently holds only a historical importance. However, mainly in endemic areas, urologists still faced patients with complex urinary stone disease^[4]. The main appearance of the complex urinary stone disease occurs as high stone burden and anatomical anomalies of the collecting system. In these patients, several minimally invasive interventions with consequent Shock Wave Lithotripsy (SWL) sessions may be required. Open surgery, despite its more invasive nature, can be offered as an initial treatment option to these patient groups for a high stone clearance rate with fewer interventions^[5]. We reported a case of right renal stones treated surgically.

Case Report

A 52-years old male patient visited to the general surgery department with complaint of occasional right flank pain since 2 years. There was history of irritative lower urinary tract symptoms; dysuria, frequency in moderate severity and 1 to 2 bouts of upper UTI. No history of other medical or surgical problems was noted.

Patient was moderately built. All vitals were within normal limits. In renal ultrasonography, multiple stones in right kidney was reported. In IVP a huge semiopaque density was seen in right kidney. The urine culture was positive for E coli growth.

Due to large volume of stone and its complexity, the patient was scheduled for right anastrophic nephrolithotomy. The patient underwent open stone surgery, with right flank incision, after ligating the renal artery and opening the kidney with nephrotomy incision, the stones removed completely within 5 min after artery ligation. The ligature released after 9 minutes.

In IVP that was done 1 month after surgery, normal function of the kidneys, especially, operated right one, was recorded. Ultrasonography of the kidneys 6 months, one year and two years after operation were unremarkable.

Discussion

Urinary stone disease was mentioned and treatment of the condition was also described in ancient texts from Persian, Greek, Egyptian and Indian civilizations^[6]. Today, one in every 11 individuals experience stone disease during their life and total economic burden of the

disease accounts for more than \$10 billion expenditures annually, according to the US data [7]. An increasing prevalence of the disease was reported, especially in the older population, with a plateau of 85,000 cases per year incidence in young people according to the UK data [8].

Open stone surgery, are losing its role day and day, but sometimes its using becomes inevitable due to patients characteristics, failure of primary therapy for stone removal, complex stone burden, renal anatomic problems (such as ureteropelvic junction obstruction and infundibular stenosis with or without renal caliceal diverticulum) or an additional target of therapy apart from stone removal such as the treatment of stones in a primary obstructive mega ureter [9]. We reported a case of right renal stones in 52 years old male patient treated surgically.

Husseiny *et al.* [10] reported a case in 55-years-old patient due to a large left Staghorn kidney. After full evaluation and due to extensive spread of stone horns to the even peripheral calyces, open stone surgery performed successfully, that postoperative dynamic renal studies revealed, near normal functional left kidney.

Nambirajan *et al.* [11] in their study thirteen patients with renal stones and concomitant urinary anomalies underwent laparoscopic stone surgery combined with ancillary endourological assistance as needed. Encountered anomalies included ureteropelvic junction obstruction, horseshoe kidney, ectopic pelvic kidney, fused-crossed ectopic kidney, and double collecting system. Treatment included laparoscopic pyeloplasty, pyelolithotomy, and nephrolithotomy combined with flexible nephroscopy and stone retrieval. Intraoperative complications were lost stones in the abdomen diagnosed in two patients during follow up. Mean number of stones removed was 12 (range 3 to 214). Stone free status was 77% (10/13) and 100% after one ancillary treatment in the remaining patients. One patient had a postoperative urinary leak managed conservatively. Laparoscopic pyeloplasty was successful in all patients according to clinical and dynamic renal scan parameters.

Micali *et al.* [12] reported 17 patients who underwent laparoscopic stone extraction, including 11 with renal calculi and 9 with associated anomalies (UPJ obstruction) with stone size up to 6 cm; fifteen patients were eventually rendered stone free and one patient had a postoperative urinoma. These authors concluded that indications for laparoscopy included stones associated with anatomical abnormalities requiring reconstruction and calculi for which endourological procedures had failed.

Conclusion

Authors found that open surgery in case of multiple renal stones is favourable method with better prognosis.

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