

# Medical Treatment of JJ Stent-related Symptoms

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Although ureteric JJ stents have been widely used in Urology for many decades and their placement is considered a routine procedure, they are associated with significant morbidity and a negative impact on patient's quality of life [1]. Furthermore there is no consensus regarding stent placement after ureteroscopic stone removal or whether it is needed before Extracorporeal Shock Wave Lithotripsy (ESWL) [2]. Joshi et al. recognized patient morbidity associated with ureteral JJ stents as a significant health problem and developed a validated questionnaire (USSQ: Ureteric Symptom Score Questionnaire) [3]. USSQ has been used to determine whether novel stent designs, shapes, material or drug coatings confer any improvement in JJ stent related symptoms and/or if medications decrease JJ stent related morbidity. However, despite ongoing research, the ideal ureteric stent has yet to be discovered.

Several pharmaceutical studies and meta-analyses demonstrate a consistent beneficial effect of  $\alpha$ -blockers in patients with indwelling ureteral JJ stents [3-13]. The administration of a selective  $\alpha$ -blocker, such as alfuzosin or tamsulosin, improves stent related urinary symptoms, especially pain. In addition, sexual function and general health may be better preserved. Deliveliotis et al. demonstrated that  $\alpha$ -blockers had a positive impact on JJ stent related symptoms [4]. In their randomized prospective study they compared alfuzosin versus placebo in affecting symptoms and quality of life in patients with indwelling ureteral JJ stents. The authors administered the USSQ four weeks after stent insertion and concluded that alfuzosin improved JJ stent related urinary symptoms and pain, while sexual function and general health were better preserved. In a prospective, randomized, placebo controlled study of 55 patients with indwelling ureteral stents after ureteroscopy Beddingfield et al. reported that alfuzosin markedly decreased the pain associated with ureteral stents but had little effect on urinary symptoms in general [6]. They administered the USSQ preoperatively and 3 days after the procedure, which may have been too early. Damiano et al. performed a prospective randomized study comparing the efficacy of tamsulosin versus placebo for JJ stent related symptoms in 75 patients. The authors concluded that tamsulosin had a positive effect on stent related urinary symptoms and quality of life [10]. Wang et al. performed a prospective randomized trial comparing the effect of tamsulosin vs. placebo on stent related symptoms in 154 patients using the USSQ and the International Prostate Symptom Score (IPSS) [7]. They reported significant differences in the main score index of urinary symptoms, body pain and general health in favor of tamsulosin. Navanimitkul and Lojanapiwat assessed the efficacy of tamsulosin in improving stent-related symptoms and quality of life in patients with indwelling JJ ureteral stents after ureteroscopy, percutaneous nephrolithotomy or balloon dilatation [11]. They used the IPSS and SF-36 questionnaires at 2 and 4 weeks postoperatively. The IPSS and SF-36 scores were significantly better in tamsulosin group favoring its administration. Tamsulosin improved both urinary symptoms and quality of life without causing serious side-effects.

Along with the above mentioned  $\alpha$ -blockers studies, similar trials were performed with regimens such as anticholinergics in the treatment of stent related symptoms. Park et al. performed a prospective randomized trial to evaluate the effects of tolterodine and alfuzosin for the treatment of JJ stent-related lower urinary tract symptoms [5]. Patients completed USSQ six weeks after the JJ stent

placement. They concluded that both drugs had similar positive impact on urinary symptoms, pain, general health, work performance, and sexual performance. Norris et al. conducted a prospective, randomized double-blind, placebo controlled trial comparing oxybutynin with phenazopyridine, and placebo for the management of JJ stent discomfort in 60 patients [12]. They used a non-validated symptom questionnaire and a Visual Analog Pain (VAS) scale to measure JJ stent related symptoms. They concluded that there were no statistical significant differences between the medications and placebo.

Although the abovementioned studies were not uniformly designed and in many cases underpowered the positive effect of  $\alpha$ -blockers was far from any doubt, while the use of anticholinergics or analgesics needs further evaluation in prospective studies. Most studies did not reported all aspects of USSQ and did not complete it regularly like the study by Dellis et al. where USSQ was completed the 1st and 4th week with the JJ stent in situ and 4 weeks after its removal [9].

The pathophysiology of stent related pain may be related to irritation of the trigone, smooth muscle spasm and/or inflammation in the ureter and bladder. The bigger effect of  $\alpha$ -blockers on pain more than on urinary symptoms suggests that smooth muscle spasm in the ureter and bladder has a significant role. Further comparative studies with antimuscarinics, steroids and calcium channel blockers are needed as well as the use of validated questionnaires [14,15].

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