ARTICLE:
- **Citation:** Bo Fan, Deyong Yang, Jianbo Wang, Xiangyu Che, Xiancheng Li, Lina Wang, Feng Chen, Tiezheng Wang and Xishuang Song. *Can tamsulosin facilitate expulsion of ureteral stones? A meta-analysis of randomized controlled trials.* International Journal of Urology (2013) 20, 818-830
- **Country:** China
- **Funding:** None declared

PURPOSE:
- **Research Question(s):** To determine the efficacy and safety of the adrenergic alpha-antagonist tamsulosin in facilitating ureteral stones expulsion.
- **Hypothesis:** None proposed

DESIGN:
- **Study Design:** Meta analysis.
  - Searched PubMed database, Medline via Ovid, Embase and the Cochrane Library
  - No restrictions on the search
  - 2 separate searches done independently of the literature, with a third researcher to reconcile discrepancies.
  - Methodological quality of publications assessed by modified Jadad scoring system (8 points)
- **Outcomes:**
  - Stone expulsion (20 trials)
  - Ureteral colic (5 trials)
  - Need for auxiliary procedures (5 trials)
  - Adverse events (8 trials)

SUBJECTS:
- **Subjects:**
  - **Number of Studies / Subjects**
    - 70 initially retrieved
    - 36 selected based on abstracts
    - 16 excluded due to exclusion criteria (below)
    - Total of 20 RTC’s used
      - 14 deemed high quality
Inclusion: Studies that:
- Were RCT’s on humans
- Confirmed ureteral calculus by clinical criteria
- Compared Tamsulosin to placebo/control
- Had main outcome specified by stone-free rates or time to stone clearance
- Used films, and US for evaluation before treatment and again after to confirm clearance.

Exclusion criteria: studies that:
- Lacked adequate randomization
- Lacked original data
- Didn’t provide single clearance rate of calculi
- Didn’t use standard dose of tamsulosin (0.4mg)

Demographics
- 10 countries
- 4 continents
- 2002-2011
- 799 in tamsulonsin group
- 794 in control group
- No difference in sex, age, or stone size

DATA ANALYSIS:
Statistics:
- Used Meta-analyses and forest plots created with Review Manager 5.1 by the Cochrane Collaboration.
- X2 test used as a qualitative measure of statistical heterogeneity
- I2 test used as a quantitative measure of % inconsistency
- Publication bias evaluated with funnel plot

RESULTS:
- Increase in stone expulsion by 51% (20 trials)
  - No heterogeneity seen
  - Tamsulosen expelled stones significantly higher than control in upper, lower, and overall ureters. (P<0.00001, P<0.02, P<0.0001 respectively)
- Expulsion time reduced by 2.6 days (7 studies, 555 pts)
  - No significant heterogeneity seen
  - Significantly shorter mean expulsion times (P<0.00001)
- Ureteral colic during treatment reduced by 40% (5 trials)
  - No heterogeneity seen
  - Significantly reduced colic (P=0.0003)
- Auxiliary procedures decreased by 60% (5 trials)
  - No heterogeneity seen
  - Significant reduction in procedures (P<0.00001)
- Increase in adverse events by 117% (8 trials)
  - Heterogeneity seen
Tamsulosin caused more dizziness (167%) ((P=0.04)
The following other adverse effects not associated:
- Retrograde ejactulation
- HA
- Diarrhea
- Postural hypotension
- Total risk of adverse events significant (P=0.0007)
- No severe complications recorded in all studies
  - Risk of publication bias unlikely

LIMITATIONS
- Only 1 US study, only 1 ED study (same one which had opposite results)
- Positive studies more likely to be published
- Not all trials of same high quality
- Few placebo controlled trials
- Inclusion/exclusion criteria limited what trials were included

IMPLICATIONS FOR PRACTICE:
- Applicable to this clinical practice: very applicable to our practice as we see kidney stones in the ED regularly and our urological colleagues always recommend tamsulosin.
- Feasibility (cost, resources, etc): tamsulosin is a low-cost adjunct compared with procedures

LEVEL OF EVIDENCE / DECISION FOR USE:
- X Ready for use

- Level of Evidence:
  - X 1a Evidence obtained from meta-analysis of randomized controlled trials