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The Role of Reparil in Conjunction with Tamsulosin versus Tamsulosin Alone as a Medical Expulsive Therapy for Distal Ureterolithiasis

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Abstract: Aim The purpose of this study is to assess the safety and effectiveness of using the herbal anti-edema medication Aescin (Reparil) in conjunction with the α-blocker Tamsulosin as a medical expulsive treatment of distal ureteric stones. Patients and Procedures: In a prospective randomized controlled research, 100 patients having distal ureteral stones were divided into two therapy groups: 50 received Aescin (Reparil®) + Tamsulosin for two weeks, while the remaining 50 received Tamsulosin alone. Weekly patient follow-ups were conducted, and outcomes were documented. A successful response is characterized by total pain alleviation, a reduction in or elimination of PCS dilatation, and stone passing over the course of therapy. Findings: Both groups' pretreatment demographic information, including mean stone size, was equivalent. The mean time to stone ejection favored group A, although there was no significant distinction in the rate of stone expulsion (86% vs. 74%). Within the first week of therapy, there was a substantial difference in pain reduction favoring group A. Last but not least, group A benefited from a markedly distinct decline or elimination in PCS dilatation. Conclusion: In the MET of distal ureteric stones, the combination of the herbal anti-edema drug Aescin to α-blocker (Tamsulosin) seems to result in a considerable reduction in PCS dilatation, early pain relief, and a faster stone ejection.

Keywords:. reparil, tamsulosin; and distal ureterolithiasis.

INTRODUCTION

Urinary stone disease represents a widespread urological condition affecting approximately 10-15% of the global population, with ureteral stones constituting a significant portion of clinical presentations (Ibrahim, A. I. A. *et al.*, 1991; Türk, C. *et al.*, 2011). Distal ureterolithiasis, particularly, presents a common clinical challenge characterized by intense pain and potential complications including ureteral obstruction, infection, and renal impairment (Sio, M. *et al.*, D. 2006). The management of distal ureteral stones has evolved considerably, with medical expulsive therapy (MET) emerging as a well-established conservative approach for stones ≤10 mm in diameter (Hollingsworth, J. M. *et al.*, 2006; Michel, M. C., & de la Rosette, J. J. 2006). Alpha-adrenergic antagonists, particularly tamsulosin, have become the cornerstone of MET by inhibiting alpha-1 receptors in the distal ureter, reducing smooth muscle tone and peristaltic frequency, thereby facilitating stone passage. Despite its proven efficacy, tamsulosin monotherapy demonstrates variable success rates, with stone expulsion rates ranging from 70-85%, leaving room for therapeutic enhancement through combination therapies. (Parsons, J. K. *et al.*, 2007)

Recent research has focused on optimizing MET through synergistic drug combinations that target different physiological mechanisms involved in stone expulsion (Liatsikos, E. N. *et al.*, 2007). Reparil (aescin), a well-known phlebotonic and anti-inflammatory agent derived from horse chestnut seeds, presents a promising adjunct to conventional alpha-blocker therapy. Its mechanism of action involves anti-exudative, anti-edematous, and venotonic properties that may complement the smooth muscle relaxation provided by tamsulosin (Seitz, C. *et al.*, 2009; Preminger, G. M. *et al.*, 2014). By reducing peri-ureteral inflammation and edema at the stone implantation site, Reparil may potentially decrease resistance to stone passage and alleviate the inflammatory component of ureteral colic. The pharmacological profile of aescin includes inhibition of inflammatory mediators such as prostaglandins and leukotrienes, restoration of capillary integrity, and improvement of venous tone, all of which may address the pathophysiological processes that complicate stone passage. (Al-Ansari, A. 2010)

Despite a strong theoretical rationale, the combination of Reparil with tamsulosin remains inadequately investigated in clinical settings. Current literature on MET predominantly focuses on alpha-blockers with corticosteroids or calcium channel blockers (Kaneko, T. *et al.*, 2010), with limited exploration of venoactive anti-inflammatory agents like aescin. This knowledge gap is particularly relevant given the growing interest in multimodal approaches that target both the mechanical and inflammatory aspects of ureteral obstruction (Yilmaz, E. *et al.*, 2005). The inflammatory response to ureteral stones involves complex mediators that contribute to mucosal edema, increased intraluminal pressure, and pain

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perception—factors that may significantly impede stone passage and contribute to patient discomfort. (Sasaki, S. *et al.*, 2011)

MATERIALS AND METHODS

Research Design

This is a prospective randomized controlled trial that was carried out as an outpatient procedure at the Al-Yarmouk Teaching Hospital's urology department between June 2024 and June 2025. This research comprised one hundred patients with lower ureteral calculi that were symptomatic. The portion located in the ureter between the uretero-vesical junction and the lower margin of the sacroiliac joint is known as the lower ureter. Every patient had a physical examination, history taking, and the following tests: urinalysis, blood urea, serum creatinine, KUB x-ray following preparation, urinary tract ultrasonography, and C.T. scan for some patients with lucent stones.

Patients over the age of eighteen who had recently developed ureteric colic as a result of a unilateral, single lower ureteric calculus less than 10 mm, as determined by imaging investigations.

Inclusion criteria

There should be no severe hydronephrosis, no prior ESWL, and no history of ureteric surgery or URS, although mild to moderate hydronephrosis was acceptable.
This stone has not had any prior medical care.
No lactation or pregnancy.
There are no renal stones or active UTIs, and there are just ureteric stones.
No impairment of the kidneys.

All patients gave their informed permission before being divided into two therapy groups. For two weeks, 50 patients in the first group (A) received treatment with 0.4 mg of tamsulosin per day, 20 mg of Reparil (Aescin) tab. Twice a day, and 50 mg of tramadol HCL tab. as needed. The second group (B) consisted of 50 patients who received treatment for two weeks with 0.4 mg tab of tamsulosin once a day and 50 mg tab of tramadol HCl as needed. Both groups' patients were instructed to increase their daily fluid intake for around two liters, to carry on with their regular activities, to note any negative treatment effects, and to be mindful of and document the dates on which their discomfort and stone passage stopped. Weekly follow-up with the patients included history and physical examination, urine, renal function tests, renal ultrasonography, and KUB screening for:-

- Time for pain to stop requiring analgesia.
- Any reduction or elimination of dilatation of the upper tract (via U/S).
- The stone tunnel.
- Adverse medication reactions.

Complete pain relief, a reduction in or elimination of hydronephrosis, and ultimately stone passing over the course of therapy are all considered successful responses.

Failure was deemed to have occurred if:

- The patient was unable to pass the stone after 14 days.
- Hospitalization throughout the research period due to uncontrolled pain and/or uroseptic fever.
- There is no reduction in hydronephrosis, or even an increase.

Statistical Analysis

IBM SPSS software, version 22,0, was used to statistically evaluate the results. The Student's test and chi-square test were used in statistical analysis to compare the results in the two treatment groups. A P-value of less than 0.5 is deemed significant.

RESULTS

One hundred patients who had lower ureteric stones and ureteric colic were assessed and enrolled during the research period. They are between the ages of 18 and 60, with an average age of 34. The biggest stone was 9 mm in size, while the smallest was 4 mm. They were divided into two groups for therapy. For two weeks, 50 patients in group A received treatment with tamsulosin plus Reparil, while 50 patients in group B received only tamsulosin. Regarding pre-treatment data, Table 1 indicates that there was no significant difference (P >0.05) between groups A and B in terms of age, sex distribution, stone location, and stone size.

Table 1: Summary of pre-treatment data for the two groups and results of randomization based on an independent test and chi-square test.

	Group A (n = 50)	Group B (n=50)	P value
Mean patient age (in yrs) ± SD	34.6 ± 9.65	34.92 ± 8.13	> 0.05
Mean stone size in mm ± SD	5.72 ± 1.4	5.66 ± 1.2	> 0.05
Sex (Male/Female)	31/19	33/17	> 0.05

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Stone localization (Right/Left)	35/15	37/13	> 0.05

About the statistics on stone ejection (TABLE 2). Thirty-two patients (64%) in Group A passed their stones within seven days of therapy, 11 patients (22%) in the second week, and only seven patients (14%) needed intervention because their stones had not passed. In contrast, 13 patients (26%) failed their stone, 14 patients (28%) passed their stone in the second week of treatment, and 23 patients (46%) passed their stone within 7 days of therapy in Group B. For groups A and B, the corresponding stone ejection rates were 86% and 74%. For groups A and B, the average time until stone ejection was 5.3±1.3 and 8.9±1.1 days, respectively. The mean time to stone ejection was in favor of group A ($p < 0.05$), but there was no statistically significant difference in the rate of stone expulsion between the two groups.

Table 2: Time in days for stone passage and stone expulsion rate for the two groups.

Passage of stone in days	Group A n (%)	Group B n (%)	*P value*	Significance
<7	32 (64)	23(46)	0.244	Not Significant
7-14	11 (22)	14(28)		
Stone not passed	7 (14)	13 (26)		
Stone expulsion rate	86%	74%	0.072	Not significant
Mean time to stone expulsion SD	5.3+1.3	8.9 +1.1	0.043	Significant

In Group A, 43 patients (86%) stated that their pain had gone away after seven days of starting therapy, and four patients (8%) indicated that their pain had subsided by the second week of treatment. Only three patients (6%) reported that their pain had not completely subsided by the conclusion of the treatment period. In contrast, 31 patients (62%) in Group B said that their pain had gone away during the first seven days of treatment, 10 patients (20%) had pain alleviation within the second week, and only nine patients (18%) still experienced some pain at the conclusion of treatment. Although there was a significant difference in group A's pain alleviation during the first week of therapy, there was no significant difference in the two groups' overall percentage of pain relief (Table 3).

Table 3: Time in days and percentage of complete relief of pain in the two groups.

Pain disappearance in days	Group A n (%)	Group B n (%)	*P value*	*Significance*
<7	43 (86)	31 (62)	0.006	Significant
7-14	4 (8)	10 (20)	0.036	Significant
> 14 (Still had pain)	3 (6)	9 (18)		
Overall Percentage of complete relief of pain	94%	82%	0.066	Not significant

The change in hydronephrosis was the final measure examined in the two groups (Table 4). Thirty-nine patients (78%) in group A had a decrease or disappearance of their hydronephrosis within seven days of treatment, seven patients (14%) had a decrease or disappearance within the second week of treatment, and four patients (8%), at the end of treatment, showed no change in their hydronephrosis. Within the first seven days of treatment, 26 patients (52%) in Group B experienced a decrease or disappearance in their hydronephrosis, 13 patients (26%) experienced a decrease or disappearance in their hydronephrosis within the second week of treatment, and 11 patients (22%) experienced no decrease on their hydronephrosis. Thus, the overall percentage of PCS dilatation reduction for groups A and B was 92% and 78%, respectively, with group A showing a statistically significant advantage.

Table 4: Time in days and percentage of disappearance or decrease in hydronephrosis in the two groups.

disappearance or decrease in Hydronephrosis	Group A n (%)	Group B n (%)	*P value*	*Significance*
<7	39 (78)	26 (52)	0.004	Significant
7-14	7 (14)	13 (26)	0.189	Not Significant
>14 Still had hydronephrosis	4 (8)	11 (22)		
Percentage of decrease in PCS dilatation	92%	78%	0.046	significant

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As seen in Table 5, there were very few and minor drug adverse effects in both groups. Six patients reported side effects from Tamsulosin (retrograde ejaculation, postural hypotension), whereas only one patient reported side effects from Reparil (diarrhea).

Table 5: Drug side effects.

Drug Side effect	Reparil (n)	Tamsulosin (n)
	(1)	**(6)**

DISCUSSION

Instrumentation has significantly changed the approach to treating ureteral stones from mostly open surgery to either careful waiting or less invasive techniques like ESWL and uretero-renoscopic stone removal (Dell'Atti, L. 2015). These days, the gold standard for treating ureteral stones is minimally invasive therapy. However, these methods are not risk-free, are not generally accessible in impoverished nations, and are highly costly (GUpta, S. *et al.,* 2013). Although it may cause some discomfort for the patient, watchful waiting is suitable for tiny stones that are not producing acute symptoms and are likely to pass on their own (Porpiglia, F. *et al.,* 2006). The size, form, position, and concomitant ureteral edema of the stones all affect their spontaneous transit. The chances of spontaneous passing are 80–90% for lower ureteric calculi that are 4–5 mm in size and 70–75% for calculi that are 6–7 mm. The likelihood of spontaneous passage is higher for smaller, more distant, and right-sided stones (Yilmaz, E. *et al.*, 2005; Dellabella, M. *et al.*, 2005; Hwang, E. C. *et al.,* 2012) However, the expectant method may lead to problems such as renal function deficits, hydronephrosis, and urinary tract infections (Marchese, A. S. A. B. F., & Motta, S. C. M. 2004).

Recent research has demonstrated the intriguing potential of employing MET as a conservative treatment for distal ureteral stones (Borghi, L. *et al.,* 1994; Ye, Z. *et al.,* 2011; Porpiglia, F. *et al.,* 2004; Cao, D. *et al.,* 2014). While studies in the role of anti-edema agents in this regard were limited and mostly focused on steroids to be a reference anti-edema agent (Borghi, L. *et al.,* 1994), the majority of clinical trials on MET were focused in the use of ureteral smooth muscle relaxants such as α blockers as well as Ca channel blockers (Gratzke, C. *et al.,* 2007; Kumar, S. *et al.,* 2014; Turney, B. W. *et al.,* 2014; Pinduli, I. *et al.,* 2006). To our knowledge, this is the first study that clarified the function of Aescin as a MET for distal ureteral stones. Both groups received therapy for 14 days, which is how it is intended for a variety of reasons. Lower ureteric stones that pass do so between two and three weeks after symptoms appear (Hesse, A. *et al.,* 2003). b. The first ten days of ureteral stone illness are often when the most of discomfort is felt (Fwu, C. W. *et al.,* 2013)

b) It is challenging to follow up with patients for extended periods of time under our current conditions. The treatment dosages were 0.4 mg /day for Tamsulosin and 120 mg/day for Aescin, which are the approved effective doses by their manufacturing firms. For Tamsulosin, it is the same amount utilized in numerous clinical trials on MET (Ochoa-Gómez, R. *et al.,* 2011; Vincendeau, S. *et al.,* 2010). There was no significant difference in stone passage between the two groups based on the demographic pretreatment data (Table 1) and the mean stone size ($p > 0.05$). Despite the fact that the two groups' rates of stone expulsion differed (86% for group A and 74% for group B), the difference was not statistically significant. The fact that we only used Tramadol HCL as an analgesic—a well-known pure central analgesic with no anti-inflammatory properties—and that other studies used NSAIDs as analgesics because of their well-known additive anti-edema effects (Kumar, S. *et al.,* 2013) may have contributed to the fact that, overall, our stone expulsion rates for both groups were lower than those in other studies (Pickard, R. *et al.,* 2015; Campschroer, T. *et al.,* 2014). There was a statistically significant difference in favor of group A, with a mean time to stone evacuation of 5.3 days compared to 8.9 days for group B.

The mean time to stone expulsion was 5.3 days for group A Vs 8.9 days for group B, which was statistically a significant difference in favor of A. This beneficial role of anti-edema agents (rapid stone expulsion) was also noticed when steroids were used as MET (Kumar, S. *et al.,* 2013; Portis, A. J. *et al.,* 2019). 86% of patients in group A had complete relief of pain within 1st 7 days of treatment, which is significantly different from group B (only 62%), but the overall percentage of pain relief at the end of treatment was comparable (94% for A Vs 82% for B). This significant early

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control of pain achieved in the group treated with Reparil was not obvious when steroids were used as anti-edema agents in other studies (Ochoa-Gómez, R. *et al.*, 2011; Meltzer, A. C. *et al.*, 2018). The percentage of patients who achieved a decrease or disappearance of PCS dilatation was significantly different between the two groups and in favor of group A, both within the 1st week and at the end of treatment (Table 4). In fact, the major response achieved in the group treated with Reparil was basically the relief of obstruction, represented by disappearance or decrease in PCS dilatation, relief of pain, and absence of complications (Yilmaz, E. *et al.*, 2005; Gratzke, C. *et al.*, 2007; Meltzer, A. C. *et al.*, 2018). Side effects of the drugs used in this study were so few and marginal, with only six patients reported side effects related to Tamsulosin, like retrograde ejaculation and postural hypotension, and only one patient reported gastrointestinal upset that may be related to Aescin (Sahin, C. *et al.*, 2015).

CONCLUSION

In the MET of distal ureteric stones, the combination of the herbal anti-edema drug Aescin and α-blocker Tamsulosin seems to provide in a considerable reduction in PCS dilatation, early pain management, and a faster evacuation of the stones. Aescin can be regarded as a legitimate member of the MET list because to its moderate effectiveness and good safety profile.

REFERENCES

1. Ibrahim, A. I. A., Shetty, S. D., Awad, R. M., & Patel, K. P. "Prognostic factors in the conservative treatment of ureteric stones." *British journal of urology* 67.4 (1991): 358-361.
2. Türk, C., Knoll, T., Petrik, A., Sarica, K., Straub, M., & Seitz, C. "Guidelines on urolithiasis." *European association of urology* (2011).
3. Sio, M. D., Autorino, R., Lorenzo, G. D., Damiano, R., Giordano, D., Cosentino, L., ... & D'Armiento, M. "Medical expulsive treatment of distal-ureteral stones using tamsulosin: a single-center experience." *Journal of endourology* 20.1 (2006): 12-16.
4. Hollingsworth, J. M., Rogers, M. A., Kaufman, S. R., Bradford, T. J., Saint, S., Wei, J. T., & Hollenbeck, B. K. "Medical therapy to facilitate urinary stone passage: a meta-analysis." *The Lancet* 368.9542 (2006): 1171-1179.
5. Michel, M. C., & de la Rosette, J. J. "?-Blocker Treatment of Urolithiasis." *European urology* 50.2 (2006): 213-214.
6. Parsons, J. K., Hergan, L. A., Sakamoto, K., & Lakin, C. "Efficacy of α-blockers for the treatment of ureteral stones." *The Journal of urology* 177.3 (2007): 983-987.
7. Liatsikos, E. N., Katsakiori, P. F., Assimakopoulos, K., Voudoukis, T., Kallidonis, P., Constantinides, C., ... & Perimenis, P. "Doxazosin for the management of distal-ureteral stones." *Journal of endourology* 21.5 (2007): 538-541.
8. Seitz, C., Liatsikos, E., Porpiglia, F., Tiselius, H. G., & Zwergel, U. "Medical therapy to facilitate the passage of stones: what is the evidence?." *European urology* 56.3 (2009): 455-471.
9. Preminger, G. M., Tiselius, H. G., & Assimos, G. "Management of ureteral calculi: EAU-AUA nephrolithiasis panel; 2007." 2014,
10. Al-Ansari, A., Al-Naimi, A., Alobaidy, A., Assadiq, K., Azmi, M. D., & Shokeir, A. A. "Efficacy of tamsulosin in the management of lower ureteral stones: a randomized double-blind placebo-controlled study of 100 patients." *Urology* 75.1 (2010): 4-7.
11. Kaneko, T., Matsushima, H., Morimoto, H., Tsuzaka, Y., & Homma, Y. "Efficacy of low dose tamsulosin in medical expulsive therapy for ureteral stones in Japanese male patients: a randomized controlled study." *International journal of urology* 17.5 (2010): 462-465.
12. Yilmaz, E., Batislam, E., Basar, M. M., Tuglu, D., Ferhat, M., & Basar, H. "The comparison and efficacy of 3 different α1-adrenergic blockers for distal ureteral stones." *The Journal of urology* 173.6 (2005): 2010-2012.
13. Sasaki, S., Tomiyama, Y., Kobayashi, S., Kojima, Y., Kubota, Y., & Kohri, K. "Characterization of α1-adrenoceptor subtypes mediating contraction in human isolated ureters." *Urology* 77.3 (2011): 762-e13.
14. Dell'Atti, L. "Silodosin versus tamsulosin as medical expulsive therapy for distal ureteral stones: a prospective randomized study." *Urologia Journal* 82.1 (2015): 54-57.
15. GUpta, S., Lodh, B., Singh, A. K., Somarendra, K., Meitei, K. S., & Singh, S. R. "Comparing the efficacy of tamsulosin and silodosin in the medical expulsion therapy for ureteral calculi." *Journal of clinical and diagnostic research: JCDR* 7.8 (2013): 1672.
16. Porpiglia, F., Vaccino, D., Billia, M., Renard, J., Cracco, C., Ghignone, G., ... & Scarpa, R.

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M. "Corticosteroids and tamsulosin in the medical expulsive therapy for symptomatic distal ureter stones: single drug or association?." *European urology* 50.2 (2006): 339-344.
17. Dellabella, M., Milanese, G., & Muzzonigro, G. "Randomized trial of the efficacy of tamsulosin, nifedipine and phloroglucinol in medical expulsive therapy for distal ureteral calculi." *The Journal of urology* 174.1 (2005): 167-172.
18. Hwang, E. C., Hwang, I. S., Yu, H. S., Kim, S. O., Jung, S. I., Kang, T. W., ... & Lu, J. W. "Effects of alfuzosin with methylprednisolone for spontaneous expulsion and pain control of lower ureteral stone." *Urological research* 40.5 (2012): 605-609.
19. Marchese, A. S. A. B. F., & Motta, S. C. M. "Our experience with nifedipine and prednisolone as expulsive therapy for ureteral stones." *Urol Int* 72.1 (2004): 43-45.
20. Borghi, L., Meschi, T., Amato, F., Novarini, A., Giannini, A., Quarantelli, C., & Mineo, F. "Nifedipine and methylprednisolone in facilitating ureteral stone passage: a randomized, double-blind, placebo-controlled study." *The Journal of urology* 152.4 (1994): 1095-1098.
21. Ye, Z., Yang, H., Li, H., Zhang, X., Deng, Y., Zeng, G., ... & Chen, Z. "A multicentre, prospective, randomized trial: comparative efficacy of tamsulosin and nifedipine in medical expulsive therapy for distal ureteric stones with renal colic." *BJU international* 108.2 (2011).
22. Porpiglia, F., Ghignone, G., Fiori, C., Fontana, D., & Scarpa, R. M. "Nifedipine versus tamsulosin for the management of lower ureteral stones." *The Journal of urology* 172.2 (2004): 568-571.
23. Cao, D., Yang, L., Liu, L., Yuan, H., Qian, S., Lv, X., ... & Wei, Q. "A comparison of nifedipine and tamsulosin as medical expulsive therapy for the management of lower ureteral stones without ESWL." *Scientific reports* 4.1 (2014): 1-5.
24. Gratzke, C., Ückert, S., Reich, O., Schlenker, B., Tilki, D., Seitz, M., & Stief, C. G. "PDE-5-Inhibitoren." *Der Urologe* 46.9 (2007): 1219-1223.
25. Kumar, S., Jayant, K., Agrawal, S., & Singh, S. K. "Comparative efficacy of tamsulosin versus tamsulosin with tadalafil in combination with prednisolone for the medical expulsive therapy of lower ureteric stones: a randomized trial." *Korean journal of urology* 55.3 (2014): 196-200.
26. Turney, B. W., Appleby, P. N., Reynard, J. M., Noble, J. G., Key, T. J., & Allen, N. E. "Diet and risk of kidney stones in the Oxford cohort of the European Prospective Investigation into Cancer and Nutrition (EPIC)." *European journal of epidemiology* 29.5 (2014): 363-369.
27. Pinduli, I., Spivacow, R., Del Valle, E., Vidal, S., Negri, A. L., Previgliano, H., ... & Boffi-Boggero, H. J. "Prevalence of urolithiasis in the autonomous city of Buenos Aires, Argentina." *Urological research* 34.1 (2006): 8-11.
28. Hesse, A., Brändle, E., Wilbert, D., Köhrmann, K. U., & Alken, P. "Study on the prevalence and incidence of urolithiasis in Germany comparing the years 1979 vs. 2000." *European urology* 44.6 (2003): 709-713.
29. Fwu, C. W., Eggers, P. W., Kimmel, P. L., Kusek, J. W., & Kirkali, Z. "Emergency department visits, use of imaging, and drugs for urolithiasis have increased in the United States." *Kidney international* 83.3 (2013): 479-486.
30. Ochoa-Gómez, R., Prieto-Díaz-Chávez, E., Trujillo-Hernández, B., & Vásquez, C. "Tamsulosin does not have greater efficacy than conventional treatment for distal ureteral stone expulsion in Mexican patients." *Urological research* 39.6 (2011): 491-495.
31. Vincendeau, S., Bellissant, E., Houlgatte, A., Doré, B., Bruyère, F., Renault, A., ... & Tamsulosin Study Group. "Tamsulosin hydrochloride vs placebo for management of distal ureteral stones: a multicentric, randomized, double-blind trial." *Archives of internal medicine* 170.22 (2010): 2021-2027.
32. Pickard, R., Starr, K., MacLennan, G., Lam, T., Thomas, R., Burr, J., ... & McClinton, S. "Medical expulsive therapy in adults with ureteric colic: a multicentre, randomised, placebo-controlled trial." *The Lancet* 386.9991 (2015): 341-349.
33. Campschroer, T., Zhu, Y., Vernooij, R. W., & Lock, M. T. "Alpha-blockers as medical expulsive therapy for ureteral stones. Cochrane. Database." *Syst Rev* (2014): 4.
34. Kumar, S., Kurdia, K. C., Ganesamoni, R., Singh, S. K., & Nanjappa, B. "Randomized controlled trial to compare the safety and efficacy of naftopidil and tamsulosin as medical expulsive therapy in combination with

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prednisolone for distal ureteral stones." *Korean journal of urology* 54.5 (2013): 311-315.
35. Portis, A. J., Portis, J. L., Borofsky, M. S., & Neises, S. M. "Beyond medical expulsive therapy: evolution to supported stone passage for ureteric stones." *BJU international* 123.4 (2019): 661-668.
36. Meltzer, A. C., Burrows, P. K., Wolfson, A. B., Hollander, J. E., Kurz, M., Kirkali, Z., ... & Brown, J. "Effect of tamsulosin on passage of symptomatic ureteral stones: a randomized clinical trial." *JAMA internal medicine* 178.8 (2018): 1051-1057.
37. Sahin, C., Eryildirim, B., Kafkasli, A., Coskun, A., Tarhan, F., Faydaci, G., & Sarica, K. "Predictive parameters for medical expulsive therapy in ureteral stones: a critical evaluation." *Urolithiasis* 43.3 (2015): 271-275.

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