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Clinical application of synthetic osmotic cervical dilator in labor pre-induction: departmental protocol and literature review

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ABSTRACT

Labor induction is a common obstetric procedure, performed in approximately 30–40% of pregnancies in developed countries. This intervention is typically employed to stimulate uterine contractions before spontaneous labor begins, especially when there are maternal or fetal health concerns. Hygroscopic dilators, used for cervical ripening in these cases, have demonstrated high success rates in achieving adequate cervical dilation. Their usage can reduce the need for pharmacological agents, thereby minimizing the risk of hyperstimulation and other side effects associated with labor induction drugs [1–2].

DEPARTMENTAL PROTOCOL

In our department, we employ osmotic dilators for cervical ripening as part of preinduction labor procedures. Prior to the application of dilators, patients undergo transvaginal ultrasound of the cervix and gynecological examination. Additionally, fetal wellbeing is assessed using ultrasound and cardiotocography (CTG). Patients with a Bishop score below 3 are eligible for osmotic cervical dilators. The standard protocol involves inserting three Dilapan-S dilators into the cervix for 24 hours (Fig. 1 A, B). After insertion, a transvaginal ultrasound is performed to ensure proper placement (Fig. 1 C, D). During the 24-hour period, fetal heart rate is monitored every two hours through standard auscultation, without the need for additional supervision. The dilators are removed if labor contractions begin, if the rupture of membranes or after 24 hours, followed by a reassessment of the cervix through a gynecological examination (Fig. 1 E, F).

LITERATURE REVIEW

Mechanical methods for cervical ripening, such as hygroscopic dilators, are considered safer compared to prostaglandins. They are widely accepted among patients due to their higher safety profile. Various studies have compared the use of hygroscopic cervical dilators (Dilapan-S) with other mechanical and pharmacological methods of labor induction. Patients undergoing induction with Dilapan-S reported higher satisfaction rates, and the method was associated with reduced risks of hyperstimulation and pain during cervical ripening, enhancing its safety profile compared to pharmacological induction [2, 4].

A randomized controlled trial in 2022 compared osmotic cervical dilators and misoprostol in a cohort of 307 women, with 151 treated with osmotic dilators and 152 with misoprostol. Results indicated that patients using hygroscopic dilators experienced less abdominal and vaginal pain and improved sleep quality. Moreover, a higher percentage of these patients had vaginal deliveries compared to those using misoprostol (61.6% vs 59.2%) [5]. Induction with Dilapan-S can be performed in an outpatient setting and does not require continuous electronic fetal monitoring, thereby improving patient comfort and reducing hospitalization duration. Shorter hospital stays correlate with higher patient satisfaction and lower healthcare costs. The use of Dilapan-S for labor induction has yielded satisfactory results, with cervical maturity significantly improving from a Bishop score. Patients did not report any discomfort, gastric issues, or pain during the procedure [6]. Dilapan-S offers a similar cervical preparation time for vaginal delivery compared to misoprostol but provides a better safety profile, greater patient comfort, and a lower risk of myometrial hyperstimulation. The U.S. Food

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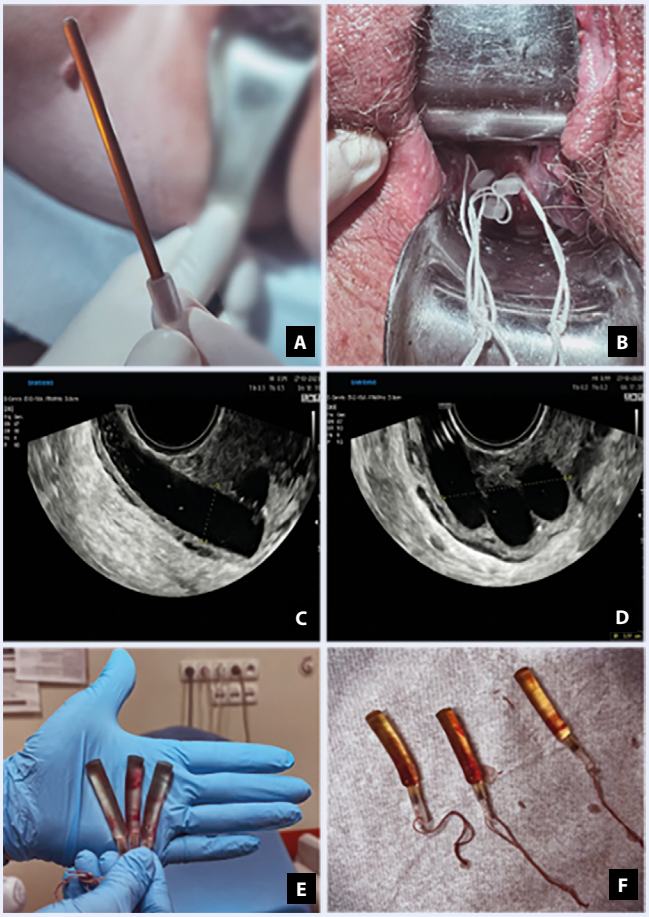

Figure 1. A. Synthetic osmotic cervical dilator (Dilapan-S), **B.** 3 synthetic osmotic cervical dilators (Dilapan-S) in cervix, **C, D.** Synthetic osmotic cervical dilators (Dilapan-S) in cervix after 24 h in transvaginal ultrasound, **E, F.** Synthetic osmotic cervical dilator (Dilapan-S) after 24 h

and Drug Administration approved his method for labor induction in 2015, and it is not contraindicated for women with a history of cesarean sections [4–6].

CONCLUSION

Medical professionals should consider synthetic osmotic cervical dilators as an effective and safe method for cervical ripening, particularly in outpatient settings.

Article information and declarations

Ethics statement

None.

Author contributions

Maisa Manasar-Dyrbus 25%, Katarzyna Wilk 20%, Maja Zieba-Domalik 20%, Jakub Staniczek 25%, Rafal Stojko 10%.

Conflict of interest

Authors declare no conflict of interest.

REFERENCES

1. Bomba-Opoń D, Drews K, Huras H, et al. Polish Gynecological Society Recommendations for Labor Induction. Ginekol Pol. 2017; 88(4): 224–234, doi: 10.5603/GP.a2017.0043, indexed in Pubmed: 28509326.
2. Socha MW, Flis W, Wartęga M, et al. A Review of the Mechanism of Action and Clinical Applications of Osmotic Dilators for Cervical Ripening in the Induction of Labor and in Gynecology Procedures. Med Sci Monit. 2023; 29: e940127, doi: 10.12659/MSM.940127, indexed in Pubmed: 37368878.
3. Rath W, Kummer J, Königbauer JT, et al. Synthetic Osmotic Dilators for Pre-Induction Cervical Ripening — an Evidence-Based Review. Geburtshilfe Frauenheilkd. 2023; 83(12): 1491–1499, doi: 10.1055/a-2103-8329, indexed in Pubmed: 38046527.
4. Staniczek J, Manasar-Dyrbuś M, Stojko R. Comparing the efficacy of synthetic osmotic dilators with foley cathether and dinoprostone insert for cervical ripening in term pregnancies. Europ J Obstet Gynecol Reproduct Biol. 2024; 293: 108, doi: 10.1016/j.ejogrb.2023.08.305.
5. Gavara R, Saad AF, Wapner RJ, et al. Cervical Ripening Efficacy of Synthetic Osmotic Cervical Dilator Compared With Oral Misoprostol at Term: A Randomized Controlled Trial. Obstet Gynecol. 2022; 139(6): 1083–1091, doi: 10.1097/AOG.0000000000004799, indexed in Pubmed: 35675605.
6. Saad AF, Gavara R, Senguttuvan RN, et al. Outpatient Compared With Inpatient Preinduction Cervical Ripening Using a Synthetic Osmotic Dilator: A Randomized Clinical Trial. Obstet Gynecol. 2022; 140(4): 584–590, doi: 10.1097/AOG.0000000000004942, indexed in Pubmed: 36083097.