

Induction of labour: eternal controversy

Abstract

According to WHO, 25% of all deliveries are induced in developed countries. There are many controversies and multiple guides to induction of labour (IOL) are used in different hospitals. There are social or maternofetal indications to IOL. The way to perform the IOL depends on cervical status. Currently, prostaglandins are considered the most effective method to IOL (delivery before 24hours). Depends on each patient, it is recommended misoprostol or dinoprostone. For cases with contraindications for prostaglandins, mechanical methods (Foley catheter or double balloon intracervical catheter) are good alternatives. In any case, some special circumstances (twins' pregnancies, women with previous caesarean...) must be considered. According to perinatal outcomes, both methods are similar. Although prostaglandins are more cost-effective method, women are most satisfied with mechanical methods.

Keywords: labour induction, misoprostol, double-balloon catheter, foley catheter, dinoprostone

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Introduction

Induction of labour (IOL) is one of the most frequently used techniques in current obstetrics. According to WHO, 25% of all deliveries in developed countries are induced. Generally, developing countries have lower rates of IOL.¹ The goal is to get the advancement of the delivery before its spontaneous evolution. There are many controversies on this procedure and; therefore, dissimilar guides are used in different hospitals. In addition, it is not a harmless technique and for this reason it is important to have adequate protocols in order to optimize resources and diminish risks.² In this review, we present the main controversies related to IOL.

What are the indications for induction of labour?

We have two types of indications. First, social or geographical indication. Maternal anxiety or the risks of childbirth precipitated in rural areas are some of its reasons. According to American College of Obstetricians and Gynaecologist, this is a not appropriate indication.³ An adequate program could reduce induction by this reason in different hospitals.⁴ There is no consensus about if this practice increases the rate of caesarean section,^{5,6} however it could reduce the risk of stillbirth, neonatal care and macrosomia.⁷⁻⁹

On the other hand, we have IOL for maternofetal reasons. Premature rupture of membranes, post-term pregnancy, hypertension, intrauterine growth restriction, oligoamnios or maternal disease are some of most common indications.¹⁰ In these cases, it is essential to establish updated and consensual actuation protocols for IOL.

How can induction of labour be done?

The way to perform the IOL depends fundamentally on the cervical status. For Bishop <6 it is advised cervical ripening before stimulation with oxytocin.¹¹ Currently, prostaglandins are considered the most effective method (delivery before 24hours).^{12,13} Other alternatives such as mechanical methods (Foley catheter, double balloon intracervical catheter) have also demonstrated efficacy and safety for IOL.¹⁴⁻¹⁶

Multiple prostaglandin regimens have been shown to improve

unfavourable cervix.^{17,18} Vaginal misoprostol has demonstrated superiority versus dinoprostone with similar safety.^{19,20} Misoprostol can also be administered orally with a rapid systemic spike and rapid decrease in the blood concentration.^{21,22} If we compared with vaginal administration, it is slower but has better perinatal results and lower rate caesarean.²³

However, misoprostol has some side effects. Tachysystole is the most frequent. For this reason, in case of high risk of tachysystole (eg. polyhydramnios), dinoprostone could be a better alternative. There are a several preparations marketed as cervidil®, prepidil® or dinoprostone vaginal insert device®. The last one, as advantage, can be removed in case of hyperstimulation and seem to be a safe and effective option in patients with previous caesarean section.²⁴

In general, mechanical methods have an efficacy similar to prostaglandins, but with fewer deliveries within the first 24hours and a similar rate of cesarean section.^{25,26} According to some studies, double balloon intracervical catheter seems to be more effective than Foley catheter.^{27,28} Application of tension to these procedures does not improve results.²⁹ In addition, higher doses oxytocin may be necessary with mechanical methods compared to prostaglandins.¹⁶ In spite of these limitations, mechanical methods could be especially useful in patients with risk of hyperstimulation or when prostaglandins are contraindicated (eg. previous uterine surgery).³⁰ Although, in case of previous caesarean section, we must always keep in mind that IOL is associated with an increased risk of uterine rupture respect to spontaneous delivery.³¹ Controversy exists on the increased risk of maternofetal infections with mechanical methods. According to some studies, it does not happen when there is no premature rupture of membranes.³²

Selecting the method several special circumstances should be considered. First, in women with hypertension during pregnancy prostaglandins are more effective than Foley catheter with similar rate of hyperstimulation.³³ Second, for obese patients prostaglandins and mechanical methods have a similar efficacy. And third, in case of twin pregnancy, IOL is considered a safe technique although it is associated an increased risk of caesarean³⁴⁻³⁶ independently of method that has been used Mei-Dan E.³⁷ Due to the risk of hyperstimulation,

dinoprostone vaginal insert device or mechanical methods for unfavourable cervix in case of twin pregnancies are recommended.

An important fact related to the patient is the comfort and satisfaction with the IOL methods. Although some patients refer discomfort with the mechanical methods especially at the time of insertion; women have a high degree of satisfaction with these methods.^{38,39}

It is controversial if the sequential use of catheters and prostaglandins has a greater number of deliveries in first 24hours.^{40,41} However, recent data suggest that with the application of Foley catheter plus oxytocin or prostaglandins an increased number of deliveries in first 24hours is achieved.⁴²⁻⁴⁴

Regarding perinatal outcomes and related to spontaneous labour, IOL is associated with more maternal complications and worse perinatal results⁴⁵ with independence of the method used Duro-Gómez J.⁴⁶ Finally, for favourable Bishop (≥ 6) early amniotomy prior to oxytocin stimulation reduces the interval to delivery.⁴⁷

What is the most cost-effective method?

The factors that most influence the cost are, the Bishop score, previous deliveries, IOL due to maternal hypertension and caesarean section after IOL.^{48,49} Considering these factors, misoprostol seems to be the most cost-effective option.²

Conclusion

There are a huge number of publications related to IOL showing a wide variability in the different methods of induction. This fact highlight the of further randomized studies to determine the most appropriate method. Moreover, each patient must be individualized and informed about risks and benefits of IOL.

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Conflict of interest

The authors declared there are no conflicts of interest in publication of this article.

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