

## Induction of labor with oxytocin or prostaglandins

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### Objective

To analyze obstetric results obtained in women with induction of childbirth due to term premature rupture of membranes (PROM) during 2022. Evaluate if usual management in our centre, which consists of expectation for 12-24 hours prior induction, leads to different obstetric results versus direct induction with prostaglandins. Determine whether cervical conditions at admission could influence obstetric outcomes depending on the management performed.

### Methods

Cross-sectional descriptive observational study of all pregnant women admitted by term PROM during the year 2022 at Sant Joan d'Alacant University Hospital. The vast majority were given induction of delivery with oxytocin after an expectation period of 12-24 hours without spontaneously onset of labour. On the other hand, a small group of patients were induced to deliver by prostaglandins using dinoprostone 10mg (PG E2) (propess®) for 12 hours without prior expectation and in case of non-initiation of labour during the next 24 hours oxytocin was administered. The diagnosis of PROM was based on clinical examination and corroborated by the use of the IGFBP-1 protein detection test (actim prom®), except for cases very obvious through clinical findings. The data will be expressed in percentages and displayed in tables and charts. Obstetrics results of each group were described without comparative analysis since the selection of the management carried out, it was not randomized and the groups are non-comparative.

### Results

During 2022, a total of 997 deliveries were attended at Sant Joan d'Alacant University Hospital. Induction of labour due to term PROM was required for 228 patients (22.86 %) which mean age was  $32.91 \pm 5.99$  years (range 15-44 years). The time of PROM before admission was not analyzed. Of these 228 patients with term PROM, in 187 patients (82.01%) expectation was performed between 12-24 hours and subsequently induction with oxytocin was initiated and for 41 patients (17.15%) induction of delivery without prior expectation was performed by placing 10 mg vaginal dinoprostone for 12 hours and in case of non-initiation of labour within 24 hours intravenous oxytocin was started. We observed in patients with expectation and later induction with oxytocin that 145 of them had vaginal delivery (77.55 %) vs. 42 of them who underwent cesarean section (22.45 %). The instrumented delivery rate was 9.21% (21 patients). On the other hand, we found that 23 patients of the group of patients who did not perform expectation but direct induction with the use of prostaglandins had vaginal delivery (68.29%) vs. 13 patients who underwent cesarean section (31.71%). The instrumented delivery rate was 12.19% (5 patients). Bishop's test was used to assess cervical length. To analyze whether the differences that could be found between the groups depended on the cervical length at the admission. The Bishop scoring mean of patients with induction after expectation was  $4.35 \pm 3.00$  vs. the patients who underwent direct induction with prostaglandins, which was  $2.68 \pm 2.99$ , this difference being significant (t test  $p < 0.05$ ). We observed a nearly 10 percentage point difference in the rate of caesarean section obtained from direct induction with prostaglandins compared to observed in expectant management, even without getting significance. However, these differences cannot be attributed to one management or the other because it was a descriptive study, whose way of choosing the induction method of each women was not randomized, therefore the groups were not comparative. The decision to manage with prostaglandins in those women with more unfavorable cervical conditions is perhaps the reason of the results, as we observed when analyzing the Bishops score between the 2 groups evaluated. Women who received prostaglandin induction (41 patients) were analyzed classified into 2 subgroups: those who received prostaglandins and started labour directly without requiring oxytocin (28 patients) and those who received prostaglandins and after 24 hours yet required administration of oxytocin to start labour (13 patients). Among those induced with prostaglandins who directly started labour, 23 women had vaginal delivery (82.15%) vs 5 patients who underwent in cesarean section (17.85%); the rate of instrumented deliveries was 10.71% (3 patients). Whereas in the other group we found the occurrence of vaginal delivery in 5 patients (38.46%) vs. 8 patients who underwent cesarean section (61.54%); the rate of instrumented deliveries in this subgroup was 15.38% (2 patients). There was a significant increase in the caesarean section rate of patients who after induction of labour with prostaglandin required the use of oxytocin to start labour vs those with onset of the labour with the use of prostaglandins (OR: 7.36 95% CI 1.67-32.26). There were not significant differences between the two groups in the instrumental delivery rate (OR: 1.43 95% CI 0.21-9.66). Nevertheless, looking at the Bishops score between the 2 subgroups, we also found significant differences in those who started labour directly without requiring oxytocin (mean Bishops test of 3.14) vs those who required the use of oxytocin after the use of prostaglandins (mean Bishops test of 1.69). Possibly the differences on caesarean section rate may be due to worse cervical status of those women who were unable to start labour directly after prostaglandins or for another factor that could not be detected.

### Conclusion

In our center we have found a PROM prevalence of 22.86%. These data were slightly higher than those reported in the literature (PROM 3-18%). We found differences in the caesarean section rate between the expectant management or starting the induction with prostaglandins being lower in expectant management. Nonetheless, it did not achieve significance. Therefore, we cannot establish a relationship according to the management performed because they are non-comparative groups. Furthermore, there was a significant difference on the Bishop test score between those with expectation vs those with prostaglandin induction without expectation that might explain some observed result on the caesarean section rate differences. The caesarean section rate was significantly lower in those cases with direct onset of labour after prostaglandin administration than in those cases in whom was needed the use of oxytocin 24 hours later, showing that last group of women have less probabilities of vaginal delivery. However, the cervical length at the admission could have influenced these results since those women with worse initial cervical conditions, who did not achieve direct initiation of labour with prostaglandins requiring the subsequent use of oxytocin, were the ones with the highest rate of caesarean section compared to the rate obtained by those with a non-suited cervical length but somewhat better at the admission.

### Obstetric outcomes according to the type of labor induction management

