Elective Induction of Labor – Review of the Literature

There has recently been much debate and frank opposition to efforts to limit elective induction of labor between 39-41 weeks. This brief review will present both a historical perspective and recent data regarding this topic.

In 2011 the Washington State House Bill 1131 established the Bree Collaborative. The purpose was to provide a mechanism through which public and private health care stakeholders could work together to improve the quality, health outcomes and cost effectiveness of care in Washington State. The 24 member collaborative was charged with identifying up to three health care services annually where there was substantial variation in practice patterns or high utilization trends in Washington State. They were further charged with identifying and recommending practice approaches based on evidence. Obstetrics was the first topic selected for study.

In August 2012 the first Bree Report was published. One of the three Areas of focus was avoiding Elective Induction of Labor when the cervix is unfavorable. Part of the justification for this focus was based on the 2009 ACOG practice Bulletin advising doctors to warn women having their first birth that risk of C section doubled if labor was induced. Obstetric literature supported this opinion and data from Washington State showed that hospital variation was wide varying from 3-48% for both elective and non-elective inductions.

In February 2013 ACOG released a statement called " Top Five Tests and Procedures to Question in OB Gyn. This was done in support of the American Board of Internal Medicine " Choosing Wisely" campaign. The second item on the list said
" Don't schedule elective, non medically indicated induction of labor between 39-41 weeks unless the cervix is deemed favorable. "

Thus when the Roadmap and Medicaid Incentive initiatives were developed there was strong support at both the state and national level to discourage elective induction of labor, especially with unfavorable cervix.

In the last 18 months data have become available to both challenge this opinion but there is also data to support this opinion. Most of the data challenging hazards of elective induction have been the result of systematic analyses (Caughey OBGYN 2006), or retrospective cross sectional analyses. (Gibson Am Jo OB Gyn 2014). "Elective" has not been well defined in most of these retrospective meta-analyses. Gibson clearly also showed a doubling or greater of cesarean rates when women were induced with an unfavorable cervix.

Other data has supported the long held belief that induction was associated with increased c-section rates and increased hospital costs. Wolfe (Am Jo Ob Gyn 2014) found in a retrospective analysis that elective induction as opposed to expectant management in obese patients was associated with a 54% increase in c section (40

vs. 26%). Osmundson (OB Gyn 2001) found a non-statistically significant increase in c section (43%vs 34%) with elective induction vs. expectant management in women with unfavorable cervix. In addition, they found length of labor increased by 4 hours in the induction group. This is consistent with prior studies showing substantial increased costs of labor induction with unfavorable cervix (Kaufman Am Jo OB Gyn 2002). Jonsson et al published a prospective cohort study of 791 multiparous women that showed a 2.5 OR of cesarean section in women electively induced and a 3.6 OR in those who had cervical ripening. They specifically excluded women with PROM and pregnancy complications.

Few randomized studies on this issue have been performed. One such study was recently completed in Washington State at Madigan Army medical center. Miller (OB Gyn 2014 May123 Suppl 1: 72S) and published in abstract form.
This study was a randomized study in Nulliparous women with unfavorable cervix randomized to induction at 39 weeks or expectant management. The study was powered to show no less than a 100% difference in c-section rates. On conclusion there was a 71% increase in c -section (31%vs. 18%)in the induced patients. (RR1.7, CI 0.95-3.06, p=0.07). While not technically statistically significant there was only a 1/16 chance this result was by chance alone. In addition the length of stay was longer in the induced labor patients. Since the study was powered to show a doubling of c section rate the fairest thing that can be said is that it was underpowered to show lesser increases in cesarean section that many would consider clinically significant.

As a result of the emphasis on induced labor in Washington State, EvergreenHealth, a private hospital in Washington State, evaluated the effect of cervical ripening on patients with electively induced labor. Analyzing their data from OB COAP, in both nulliparous and multiparous patients, they found a doubling of cesarean section rate in electively induced patients who needed cervical priming as opposed to those in who the cervix was deemed ripe and thus induced without cervical ripening. In both nulliparous and multiparous patients the c-section rate was similar in spontaneously laboring patients and those who were induced with a favorable cervix. Using cervical ripening as a surrogate for unfavorable cervix, these data would support the policy of avoiding elective induction in patients with unfavorable cervix.

Finally, some have raised the issue of fetal death as a result of gestations past 39 weeks. Some published curves show increases in fetal death from 1/1000 to 2/1000 just before 41 weeks gestation. (BMY Open 2014; 4 1-8). The most recent data from Washington State (2012) however does not show a similar trend. When analyzed with the technique of ongoing pregnancies the fetal death rate at 39, 40 and 41 weeks gestation is approximately 1/2500 and does not show an upward rise. Even looking retrospectively at fetal death data in Washington State the fetal death rate at

40 and 41 weeks has been nearly identical for the last 4 years and never higher than 1/1500. Whether labor induction at 39 weeks will prevent any of the fetal deaths is an unanswered question partly because the timing of late fetal deaths (intrapartum or antenatal) is never detailed in any published reports. These reports do not clarify if women had fetal monitoring initiated when they became 41 weeks gestation or greater.

The most thoughtful piece recently written on this subject was by George Macones . (Ann Int Med 2009). He points out that definitive evidence (randomized controlled trials) have rarely been done with only 3 being in the literature at that time and all were judged to be of low quality. He calls for well-designed RCTs to be done. In the meantime, he cautions that c-section rates are only one important measure of outcome. Health utilization and cost need to be factored into the decision-making, and all currently available data show elective induction increases both utilization and cost. He concludes whether elective induction will reduce c-section rates and reduce costs are open questions at the current time.