

Obstetrics morphs into a new surgical specialty in the 20th century America,
which morphs into "Industrialized Obstetrics" in the 21st century

~ The natural conclusion to a hundred years of interventionist obstetrics as the
standard for healthy women and normal birth as a surgical procedure

Atul Gawande, MD, ~ The New Yorker, Annals of Medicine,
Excerpts → THE SCORE: *How Childbirth Went Industrial*; October 09, 2006

"The two reports [in 1932 and 1933 on high level of preventable mother-infant mortality in the 1920s and 30s by the White House and NY Academy of Medicine] brought modern obstetrics to a turning point. Specialists in the field had shown extraordinary ingenuity. They had developed the knowledge and instrumentation to solve many problems of child delivery. Yet knowledge and instrumentation had proved grossly insufficient. If obstetrics wasn't to go the way of phrenology or trepanning, it had to come up with a different kind of ingenuity. It had to figure out how to standardize childbirth. And it did.

Three-quarters of a century later, the degree to which birth has been transformed by medicine is astounding and, for some, alarming. Today, electronic fetal-heart-rate monitoring is used in more than ninety per cent of deliveries; intravenous fluids in more than eighty per cent; epidural or spinal anesthesia in three-quarters; medicines to speed up labor in half (the drug of choice is no longer ergot but Pitocin, a synthetic form of the natural hormone that drives contractions). Thirty per cent of American deliveries are now by Cesarean section, and that proportion continues to rise.

.... physicians have long had an abiding faith that they could step in and at least reduce that percentage [of bad outcomes]. When the national reports of the nineteen-thirties proved that obstetrics had failed to do so, and that incompetence was an important reason, the medical profession turned to a strategy of instituting strict regulations on individual practice. Training requirements were established for physicians delivering babies. Hospitals set firm rules about who could do deliveries, what steps they had to follow, and whether they would be permitted to use forceps and other risky interventions. Hospital and state authorities investigated maternal deaths for aberrations from basic standards.

These standards reduced the number of maternal deaths substantially. In the mid-thirties, delivering a child had been the single most dangerous event in a woman's life: one in a hundred and fifty pregnancies ended in the death of the mother. By the fifties, owing *in part* to the tighter standards, and *in part to the discovery of penicillin and other antibiotics**, the risk of death for a mother had fallen more than ninety per cent, to just one in two thousand. [*emphasis added]

Over the years, hundreds of adjustments in care were made, resulting in what's sometimes called "the obstetrics package." And that package has produced dramatic results. In the United States today, a full-term baby dies in just one out of five hundred childbirths, and a mother dies in one in ten thousand. If the statistics of 1940 had persisted, fifteen thousand mothers would have died last year (instead of fewer than five hundred)—and a hundred and twenty thousand newborns (instead of one-sixth that

number).

There's a paradox here. Ask most research physicians how a profession can advance, and they will talk about the model of "evidence-based medicine"—the idea that nothing ought to be introduced into practice unless it has been properly tested and proved effective by research centers, preferably through a double-blind, randomized controlled trial. But, in a 1978 ranking of medical specialties according to their use of hard evidence from randomized clinical trials, obstetrics came in last. Obstetricians did few randomized trials, and when they did they ignored the results.

Careful studies have found that fetal heart monitors provide no added benefit over having nurses simply listen to the baby's heart rate hourly. In fact, their use seems to increase unnecessary Cesarean sections, because slight abnormalities in the tracings make everyone nervous about waiting for vaginal delivery. Nonetheless, they are used in nearly all hospital deliveries. Forceps have virtually disappeared from the delivery wards, even though several studies have compared forceps delivery to Cesarean section and found no advantage for Cesarean section. (A few found that mothers actually did better with forceps.)

Doctors in other fields have always looked down their masked noses on their obstetrical colleagues. Obstetricians used to have trouble attracting the top medical students to their specialty, and there seemed little science or sophistication to what they did. **Yet almost nothing else in medicine has saved lives on the scale that obstetrics has.** Yes, there have been dazzling changes in what we can do to treat disease and improve people's lives. We now have drugs to stop strokes and to treat cancers; we have coronary-artery stents, artificial joints, and mechanical respirators. But those of us in other fields of medicine don't use these measures anywhere near as reliably and as safely as obstetricians use theirs.

In obstetrics ... if a strategy seemed worth trying doctors did not wait for research trials to tell them if it was all right. They just went ahead and tried it, then looked to see if results improved. Obstetrics went about improving the same way Toyota and General Electric did: on the fly, but always paying attention to the results and trying to better them. And it worked. Whether all the adjustments and innovations of the obstetrics package are necessary and beneficial may remain unclear—routine fetal heart monitoring is still controversial, for example. But the package as a whole has made child delivery demonstrably safer and safer, and it has done so despite the increasing age, obesity, and consequent health problems of pregnant mothers.

The fate of the forceps is a revealing example. I spoke to Dr. Watson Bowes, Jr., an emeritus professor of obstetrics at the University of North Carolina and the author of a widely read textbook chapter on forceps technique. He started practicing in the nineteen-sixties, when fewer than five per cent of deliveries were by C-section and more than forty per cent were with forceps. Yes, he said, many studies did show fabulous results for forceps. But they only showed how well forceps deliveries could go in the hands of highly experienced obstetricians at large hospitals. Meanwhile, the profession was being held responsible for improving Apgar scores and mortality rates for newborns everywhere—at hospitals small and large, with doctors of all levels of experience.

“Forceps deliveries are very difficult to teach—much more difficult than a C-section,” Bowes said. “With a C-section, you stand across from the learner. You can see exactly what the person is doing. You can say, ‘Not there. *There.*’ With the forceps, though, there is **a feel that is very hard to teach.**” Just putting the forceps on a baby’s head is tricky. You have to choose the right one for the shape of the mother’s pelvis and the size of the child’s head—and there are at least half a dozen types of forceps. You have to slide the blades symmetrically along the sides, traveling exactly in the space between the ears and the eyes and over the cheekbones. “For most residents, it took two or three years of training to get this consistently right,” he said. Then a doctor must apply forces of both traction and compression—pulling, his chapter explained, with **an average of forty to seventy pounds of axial force and five pounds of fetal skull compression.** “When you put tension on the forceps, you should have some sense that there is movement.” Too much force, and skin can tear, the skull can fracture, a fatal brain hemorrhage may result. “Some residents had a real feel for it,” Bowes said. “Others didn’t.”

The question facing obstetrics was this: Is medicine a craft or an industry? If medicine is a craft, then you focus on teaching obstetricians to acquire a set of artisanal skills—the Woods corkscrew maneuver for the baby with a shoulder stuck, the Lovset maneuver for the breech baby, the feel of a forceps for a baby whose head is too big. You do research to find new techniques. You accept that things will not always work out in everyone’s hands.

But **if medicine is an industry**, responsible for the safest possible delivery of millions of babies each year, then the focus shifts. **You seek reliability.** You begin to wonder whether forty-two thousand obstetricians in the U.S. could really master all these techniques. You notice the steady reports of terrible forceps injuries to babies and mothers, despite the training that clinicians have received. After Dr. Apgar, obstetricians decided that they needed a simpler, more predictable way to intervene when a laboring mother ran into trouble. **They found it in the Cesarean section.**

The Cesarean section is among the strangest operations I have seen. It is also one of the most straightforward. You press a No. 10 blade down through the flesh, along a side-to-side line low on the bulging abdomen. You divide the skin and golden fat with clean, broad strokes. Using a white gauze pad, you stanch the bleeding points, which appear like red blossoms. You slice through the fascia covering the abdominal muscle, a husk-like fibrous sheath, and lift it to reveal the beefy red muscle underneath. The rectus abdominis muscle lies in two vertical belts that you part in the middle like a curtain, metal retractors pulling left and right. You cut through the peritoneum, a thin, almost translucent membrane. Now the uterus—plum-colored, thick, and muscular—gapes into view. You make a small initial opening in the uterus with the scalpel, and then you switch to bandage scissors to open it more swiftly and easily. It’s as if you were cutting open a tough, leathery fruit.

Then comes what still seems surreal to me. You reach in, and, instead of finding a tumor or some other abnormality, as surgeons usually do when we go into someone’s belly, you find five tiny wiggling toes, a knee, a whole leg. And suddenly you realize that you have a new human being struggling in your hands. **You almost forget the mother on the table.** The infant can sometimes be hard to get out. If the head is deep in the birth canal, you have to grasp the baby’s waist, stand up straight, and *pull.*

Sometimes you have to have someone push on the baby's head from below. Then the umbilical cord is cut. The baby is swaddled. The nurse records the Apgar score.

After the next uterine contraction, you deliver the placenta through the wound. With a fresh gauze pad, you wipe the inside of the mother's uterus clean of clots and debris. You sew it closed with two baseball-stitched layers of stout absorbable suture. You sew the muscle fascia back together with another suture, then sew the skin. And you are done.

This procedure, once a rarity, is now commonplace. Whereas before obstetricians learned one technique for a foot dangling out, another for a breech with its arms above its head, yet another for a baby with its head jammed inside the pelvis, all tricky in their own individual ways, now the solution is the same almost regardless of the problem: the C-section. Every obstetrician today is comfortable doing a C-section. The procedure is performed with impressive consistency.

Straightforward as these operations are, they can go wrong. The child can be lacerated. If the placenta separates and the head doesn't come free quickly, the baby can asphyxiate. The mother faces significant risks, too. As a surgeon, I have been called in to help repair bowels that were torn and wounds that split open. Bleeding can be severe. Wound infections are common. There are increased risks of blood clots and pneumonia. Even without any complication, the recovery is weeks longer and more painful than with vaginal delivery. And, in future pregnancies, mothers can face serious difficulties. The uterine scar has a one-in-two-hundred chance of rupturing in an attempted vaginal delivery. There's a similar risk that a new baby's placenta could attach itself to the scar and cause serious bleeding problems. C-sections are surgery. There is no getting around it.

Yet there's also no getting around C-sections. We have reached the point that, *when there's any question of delivery risk, the Cesarean is what clinicians turn to*—it's simply the most reliable option. If a mother is carrying a baby more than ten pounds in size, if she's had a C-section before, if the baby is lying sideways or in a breech position, if she has twins, if any number of potentially difficult situations for delivery arise, the standard of care requires that a midwife or an obstetrician at least offer a Cesarean section. *Clinicians are increasingly reluctant to take a risk, however small, with natural childbirth.*

A measure of how safe Cesareans have become is that there is ferocious but genuine debate about whether a mother in the thirty-ninth week of pregnancy with no special risks should be offered a Cesarean delivery as an alternative to waiting for labor. The idea seems the worst kind of hubris. How could a Cesarean delivery be considered without even trying a natural one? Surgeons don't suggest that healthy people should get their appendixes taken out or that artificial hips might be stronger than the standard-issue ones. Our complication rates for even simple procedures remain distressingly high.

Yet in the next decade or so **the industrial revolution in obstetrics could make Cesarean delivery consistently safer than the birth process that evolution gave us.**

Comments on Dr. Gawande's obstetrician-centric view of obstetrics:

I am a fan of Dr. Gawande's, read all his books, am impressed by the large number of hard truths that he has revealed about the healthcare system and other medical topics. The only explanation for the mis and dis=information displayed in this article is that ACOG hand-fed him all the resources used to research the article. What a pity.

Dr Gawande enthusiastically applauds the cleverness of the obstetrical profession in reducing the "appallingly high" maternal and neonatal mortality in the US from 1900 to 1940, but we (and he) already knows this also occurred on their watch and was a direct result of their decision to deconstruct normal childbirth practices for healthy women.

To be sure this was not done intentionally, but still these policies were the proximal cause for hundreds of thousands of preventable tragedies resulting from the elimination of physiologically-based care and systemized use of poor obstetrical practices. That these were preventable is clear from the stats from Europe during this same timeframe.

Then the obstetrical profession gets extra points for coming up with the new strategy of "strict regulations on individual practice" and "tighter standards" in hospitals in 1935. Dr. Gawande gives the obstetrical profession unlimited credit for cleaning up the mess during the second half of the 20th century that they themselves made during the first half of it. Inexplicably, he also cites the maternal and neonatal mortality numbers for 1940 identified in his own article as including a huge ratio of preventable deaths (Dr. ——— calculated 70,000 a year, which by 1940 was 2,800,000 preventable deaths of mothers and babies since the turn of the century, and then uses that same record of bad outcomes to convince us of how dangerous normal childbearing is and to prove how indispensable the obstetrical 'package' of routine intervention.

In the 20th century obstetricians assumed that pregnant women all suffered from an obstetrical-intervention-deficiency, for which episiotomies, forceps, and manual removal of the placenta was said to be the cure. **This seems to have a lot in common with today's CS epidemic.** In the 21st century, childbearing women are assumed to suffer from a Cesarean section deficiency, which makes it convenient that elective Cesarean is said to be "**consistently safer than the birth process that evolution gave us**".

However, the facts (then or now) do not bear this out. The big improvement in maternal outcomes between 1940 and 1950 was not the result of clever obstetricians but happenstance. We all have battlefield surgery during WWII to thank for the discoveries of safer anesthesia and better operative techniques and other medical scientists for safer blood transfusions and antibiotics. These non-obstetrical developments also gave physicians the tools they needed and still use to put out the fires that questionable obstetrical practices start.

But instead of acknowledging these historical facts, we are all suppose to be impressed by the obstetrical profession's cleverness in fixing what they broke in the first place and never simply admit the truth about this era, learn the lessons that its systemized excesses can teach us, correct the errors as efficiently as possible and get on with transforming our 21st century maternity care system into one that all Americans can be proud of.

That is the missed opportunity in Dr. Gawande's New Yorker article, the story he didn't tell. Instead we got a lesson in fairy tales.