

C-sections, Breastfeeding and Bugs for Your Baby: What the Doctor Probably Won't Tell You

by Jeff D. Leach

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There I was, with a camera in one hand and wiping the tears from my eyes with other. It was delivery day—I was going to be a dad. Like an eerie scene from a B-rated alien movie, out popped his little head from an amazingly small incision in my wife's stomach. The flash from my camera filled the room; this was the happiest day of my life.

Since that day over 11 years ago, my then wife and I had another beautiful child, also through cesarean delivery. I had not given much thought to the fact that both my children entered this world through a small incision rather than the birth canal until recently, when the Center for Disease Control's National Center for Health Statistics released its update on births in the United States in late 2005.

Since my first child was born, the rate of c-section deliveries appears to have been rising at a steady clip, jumping over 40 percent since 1996. In 2004, 29.1 percent of all children born in the United States were delivered through c-section—that's nearly 1.2 million incisions. The reasons for the increase are complicated, but have a lot to do with medical malpractice associated with vaginal deliveries, parental preference, health of the mother and or the unborn child, and just plain old convenience.

In the days following the release of the CDC report, I scoured the media outlets that picked up the story to see if anyone mentioned an interesting and potentially alarming consequence of the rise c-sections. I was looking for the mention of the words "human biology," "bacteria," "mammals," and the new nine-letter curse word of 2005—"evolution." Nary a mention from a single report, not one.

As a right of passage, the delivery of a fetus through the vaginal canal of the mother completes one of the most important cycles in the evolutionary history of humans. From an evolutionary point of view, our sudden adoption of c-sections as an increasingly preferred mode of child delivery, may be tinkering with some very important processes that took millions of years to develop. Let me explain.

In what famed British "Darwinist" Richard Dawkins calls an evolutionary stable strategy, humans have evolved a symbiotic relationship with a particular and complex set of bacteria in our intestinal system—a.k.a. the gut. The 500 or so species of bacteria, whose numbers are measured in the trillions, occupy every inch of our gut, with most of them living in an ecological niche they literally carved for themselves in our colon. As the evolutionary stable strategy suggests, the presence of these few hundred species, among all the tens of thousands of spe-

cies of bacteria found in the air, water and soil throughout the world that theoretically have access to our "open" intestinal ecosystem (think mouth to anus), is not random. This means our established intestinal ecosystem is composed of a set of bacteria that can live in nutritional and physiological harmony with us. Importantly, current members make it their evolutionary determined job to keep out new members—i.e., pathogens that seek to do us harm.

The intestine of the unborn fetus in the mother's womb is sterile, devoid of any bacteria at all. However, during vaginal delivery the newborn comes in contact with bacteria-rich vaginal and fecal matter of the mother. These bacteria quickly invade and populate the newborn child. Saving of umbilical cords and the creepy ritual of eating the mother's placenta aside, this cycle links the co-evolution of intestinal "microflora" of the mother to child, and may represent a more significant bond for those who understand it exists. This evolutionary bacterial right of passage has been and continues to be critical to the success of our species, and all mammals for that matter.

A child born through c-section essentially skips this critical evolutionary process. Though a c-section baby does receive bacteria from the mother, it's not the diverse and dense "base population" that it would have received from the vaginal fluids and fecal matter via a traditional birth. In either birthing method, the baby is subject to all the bacteria in the room—that even means the weird-looking rubber-gloved fellow in the corner—who appears to be assisting the delivery staff in some way. But who can be sure?

Once this truly amazing and scary ritual of childbirth is completed, the newborn is typically cleaned, shown to the mother for short period, and then whisked off to some warm place to spend some quality time with other new members of our species. The mother usually settles in for some much needed rest and the new father anxiously paces the corridors mumbling to his self all the things his is going to change or do better in his life. Seems some things are timeless.

But the next 24 for 48 hours pose another critical evolutionary step for mother and child—breastfeeding. Like all other mammals—and that includes our tree-swinging cousins—the secretion and release of fluid from breasts (mammary) is the sole nourishment or food for the newborn child. Yet, over 30 percent of new mothers do not breastfeed in the hospital. It is often the case that some mothers never get their milk, others have problems getting the newborn to suckle (see Editor's Note at the end) and others are just not interested.

At six months of age, the number of babies receiving breast milk drops to around 31 percent, and at 12 months it drops

further to 17 percent. The number of babies receiving some level of breast milk at 24 months hardly makes a blip on the radar screen.

C-sections and short-term breastfeeding have no precedent in our evolutionary past. Before insurance companies and organized medicine, all children entered this world via the birth canal and participated in the time-honored cycle of transfer of bacteria from mother to child. Like our monkeys and a few of the modern forager groups that still follow traditional life-ways today, breastfeeding by the mother or other women in the group (wet nursing) continued for 24 to 36 months, sometimes longer.

Breastfeeding newborns, like the evolutionary process of vaginal birth, is about bacteria. The breast milk of a human mother, like other mammalian mothers, is species-specific, having been adapted over eons to deliver specific and sufficient nutrition to guarantee proper growth, health, and immunity development. Researchers have long known that breast-fed babies possess an intestinal flora that is measurably different than formula-fed infants. Of specific interest is a group of bacteria known as bifidobacterium. Some of you may immediately recognize the name, as they are often added to dairy-based foods such as yogurt, often advertised as “live cultures” on the packaging. These are probiotics. (See article on Probiotics in this issue of *Midwifery Today*.)

Studies have shown that at one month of age, both breast-fed and formula-fed infants possess bifidobacterium, but population densities in bottle-fed infants is one-tenth that of breast-fed infants. The presence of a healthy and robust population of bifidobacterium throughout the first year or two of life contributes significantly to the child’s resistance to infection and overall development of defense systems—not to mention the physical development of the intestinal system in general. Aside from the substances secreted by these specific bacteria that are known to inhibit the growth of pathogenic bacteria, they also work to make the intestinal environment of the infant more acidic, creating an additional barrier against invading pathogens. In short, breast-fed babies are sick less, are less fussy, have fewer and shorter duration of bouts of diarrhea, and have more frequent—and softer—bowel movements.

The dominance of health-giving bifidobacterium in breast-fed babies is due to the presence of special carbohydrates in mother’s milk known as oligosacchrides. These special carbohydrates are virtually absent in cow’s milk. From a physiological point, these special carbohydrates escape digestion and absorption in the small intestine of the infant, and thus reach the colon intact—where they serve as food for, among other bacteria, the all-important bifidobacterium. As the bacteria thrive on this “food” from mother’s milk, they grow in number and absorb water, resulting in more regular and softer bowel movements. It’s important to know that the bulk of infant feces are made up of live and kicking bacteria. Look next time if you don’t believe me!

Baby formula manufacturers are catching on and creating products that contain these special carbohydrates—which are known as probiotics (remember, probiotics are food for bacteria and bacteria are called probiotics). While it’s virtually impossible to mimic the exact composition of mother’s milk, it is

possible to mimic some of the physiological effects, specifically targeting the growth of select bacteria through the delivery of oligosacchrides. One Belgium-based company in particular, has developed a natural variant of the mother’s oligosacchrides from chicory roots (think chicory coffee). After years of careful study and peer review, they are being added in greater and greater frequency to formula for infants. They love this stuff in Japan. Any company that wants to stay in the lucrative baby formula business will need to adapt their products to include these ingredients, or else be left in the dust.

In the dozens of doctor visits my then wife and I made during pregnancy, and through two births, never once did the doctor or any other person involved tell us what I just told you. In all of the “how to be a new parent” and “how to take care of your new baby” books we read, not one detailed reference to the critical passing of mother’s microflora to the child via the birth canal or the importance of feeding bifidobacterium, was ever provided.

In many cases, c-sections are absolutely necessary and should be performed. But a 40 percent increase in just the last 10 years? This makes no sense. As a father of two, I am acutely aware of the physical and emotional toll that breastfeeding has on an active mother—the little creature literally sucks the life right out of you. Face it, we live in a very different world than our not-so-distant ancestors occupied. Things are hard, but in different ways.

It’s important that expecting parents to understand some of the basic evolutionary processes of bringing a new member of our species into the world. A few snips and stitches, followed only by a small number of sips, ain’t going to cut it. The physical, nutritional and metabolic features that make us uniquely human have been shaped by millions of years of evolution. While we are culturally and socially modern, driving around in hybrid cars and arguing about stupid things, we are literally and biologically ancient hunter-gatherers. Just as lack of exercise (something we always did) and excess caloric intake (something we rarely did) will make you fat—and probably cause a number of other ailments and disease—we just can’t simply one day start delivering babies through the stomach and not breastfeeding them. Such things have consequences.

If physicians and care givers with whom we entrust the safety of the mother and child, were required to have some basic understanding of Evolution 101—as it applies to birthing and infant health and biology—we might all be healthier.

Or at least, better rested.



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Editor’s Note: Breastfeeding problems rarely occur at home where mother and baby are not separated.