Babies Don't Feel Pain: A Century of Denial in Medicine*

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Full Text: Headnote ABSTRACT: During the 20th century when medicine rose to dominate childbirth in the United States, it brought with it a denial of infant pain based on ancient prejudices and scientific dogmas no longer supportable. The painful collision of babies with doctors is seen in neonatal intensive care, infant surgery without anesthesia, painful obstetric routines, and genital mutilation of newborn males. This presentation includes a historical review of experiments on infant reactions to pain, the persistence of medical practices causing pain, and speculation about the reasons for professional indifference. (110 citations) INTRODUCTION For centuries, babies have had a difficult time getting us to accept them as real people with real feelings having real experiences. Deep prejudices have cast a shadow over them: babies were sub-human, prehuman, or as Luis deGranada, a 16th century authority put it, "a lower animal in human form." In the Age of Science, babies have not necessarily fared better. It may shock you to consider how many ways they have fared worse. In the last hundred years, scientific authorities robbed babies of their cries by calling them "echoes" or "random sound"; robbed them of their smiles by calling them "gas"; robbed them of their memories by calling them "fantasies"; and robbed them of their pain by calling it a "reflex". Before this century, newborns found themselves in the hands of women: mothers, grandmothers, aunts, and midwives, but in the 20th century, infants collided head-on with physicians, typically male physicians. In the collision, infant senses, emotions, and cognitions were usually ignored. Doctors eventually gave serious attention to the pain of mothers but not to the pain of infants. Pediatricians and obstetricians created painful routines which continue today. We must try to understand why. PAIN EXPERIMENTS WITH INFANTS Against a background of general (scientific) ignorance of infant behavior, experiments were undertaken as early as 1917 at Johns Hopkins University (Blanton, 1917) to observe newborn tears, smiles, reactions to having blood drawn, infections lanced, and reactions to a series of pin-pricks on the wrist during sleep. In these experiments, the first of many, infants reacted defensively. When blood was taken from the big toe, the opposite foot would come up at once with a pushing motion against the other ankle. Lancing produced exaggerated crying, and pin-pricks during sleep roused half the babies to move the hand and forearm. Rough cleaning of the back and head to remove vernix provoked vigorous battling movements of the hands, frantic efforts to crawl away, and angry crying. Psychologist Mary Blanton concluded, "the reflex and instinctive equipment of the child at birth is more complex and advanced than has hitherto been thought." Although these results were unequivocal, this line of experimentation continued at Northwestern University and Chicago's Lying-in Hospital (Sherman &Sherman, 1925; Sherman et al., 1936) where newborns were stuck with needles on the cheeks, thighs, and calves. Virtually all infants reacted during the first hours and first day after birth, but the trend, researchers noted, was toward more reaction to less stimulation from day one through day twelve. This finding suggested that at birth, newborns were not very sensitive but gradually became more sensitive. What the Sherman's failed to tell us was that all mothers in the study had received anesthetic drugs during labor and delivery. They took no account of the effect on the babies. For the missing information, we are indebted to psychologist Daphne Maurer (Maurer &Maurer, 1988, p. 40.) The Sherman's discovered that infants would cry in reaction to hunger, to being dropped 2-3 feet and caught, to having their heads restrained with firm pressure, or to someone pressing on their chins for 30 seconds (Sherman, 1927; Sherman et al., 1936.) Babies tried to escape and made defensive movements of the arms and legs, including striking at objects to push them away. Today, we would interpret these behaviors as "self-management" or "kinesthetic intelligence," but in those days experts argued about whether the head end or the tail end of a human baby was

more sensitive (Sherman et al., 1936: 33.) Subsequent studies to learn how infants would react were directed at the big toe (Lipsitt &Levy, 1959), calf (Kaye &Lipsitt, 1964), head, trunk, and upper and lower extremities. Especially influential was an ambitious study by Myrtle McGraw (1941) at Columbia University and The Babies' Hospital, New York, using pin pricks to reveal the "progressive maturation of nerves." Seventy-five infants were stimulated with a blunt sterile safety pin at intervals from birth to four years of age, and their responses duly recorded. Half were recorded on the new medium of motion picture film. Ten pricks in each area (head, trunk, upper and lower extremities) ensured that reactions were sufficiently "intense." Again, the influence of anesthesia on infant pain perception was overlooked. After 2,000 observations, McGraw reported that some infants a few hours or days old showed no response to pin-prick. The usual response, she said, "consists of diffuse bodily movements accompanied by crying, and possibly a local reflex." In spite of the fact these babies cried and tried to withdraw their limbs, McGraw concluded there was only limited sensitivity to pain and labeled the first week to ten days after birth as a period of "hypesthesia" (abnormally weak sense of pain, heat, cold, or touch). Her reference to a "local reflex" reflected the common medical view that reactions were mechanical and had no mental or emotional component. She asserted that the neonate could in no way localize or identify the source of painful stimulation because the cerebral cortex was not sufficiently developed to permit it. To physicians, McGraw's work seemed so thoroughly scientific that it justified the continuance of painful practices with infants. The belief that newborns were somehow not yet sensitive to pain was a prejudiced interpretation which fit comfortably into the medical view expressed in journals reaching back into the 19th century (Bigelow, 1848; Pierson, 1852). More recent research shows that newborns and older babies pinched on the arm react instantly to pain (Thoden &Koivisto, 1980), with no sign of "hypesthesia." But there were more pin-prick experiments. In 1974, apparently ignorant of the experiments already performed, Rich et al. tested 124 full-term newborns to determine the "normal response" to a succession of pin-pricks around the knee. The doctors concluded that "the normal response is movement of the upper and lower limbs usually accompanied by grimace and/or cry." All infants demonstrated the "complete" response after six or fewer pin-pricks. A different method for studying infant pain was to run water of different temperatures through cylinders attached to the baby's abdomen, leg, or forehead while observing reactions as the water was made hotter or colder. This line of research began in Europe in 1873 and was taken up in America by Pratt, Nelson, and Sun at Ohio State University (1930) and by Crudden at the University of Michigan Hospital hi 1937. Babies reacted violently, especially to cold water. Crudden found that any deviation from normal body temperature provoked immediate respiratory and circulation changes in all subjects. (No sign of "hypesthesia" here either.) DO BABIES REALLY FEEL PAIN? Do babies feel pain? Of course. There are many objective signs-if you believe what you observe. Crying It seems perfectly obvious now, but for a long time experts were informing the public that infant cries were only "random" sounds or "reflexes," not genuine communications (e.g., Illingworth, 1980). It took a quarter century of cry research to prove otherwise (Lester &Boukydis, 1985). Cries are not only meaningful signals, but they are often compelling as well: they increase in intensity with degrees of pain. Spectrographs, which reduce sound to an elaborate visual portrait, reveal how varied and complex cry language is (Lind, 1965). Acoustic studies show that changes in pitch, temporal patterning, and harmonic structure also reflect degrees of pain and urgency. For example, in a thorough study of cries during circumcision, acoustic features precisely reflected the degree of invasiveness of the surgery (Porter et al., 1986). Parents who have been present at circumcision (a rarity) have recalled how their babies cried. One father, present in the delivery room, told me of his great surprise when the obstetrician circumcised his boy at delivery. The newborn, having been quiet during the entire birth, wailed loudly throughout the circumcision. A Jewish father, reflecting on his son's circumcision on the 8th day after birth, said it was the saddest occurrence of his babyhood: the boy cried more that afternoon, he said, than any time in his whole first year. Facial expressions The pains babies feel are clearly expressed on their faces (Grunau &Craig, 1987). Brows bulge, crease, and furrow. Eyes squeeze shut, and bulging of the fatty pads about the eyes is pronounced. There is a nasolabial furrow that runs down and outwards from the corners

of the lip. The lips purse, the mouth opens wide, the tongue is taut, and the chin quivers. This look on a human face of any age communicates pain. Body Movement Body language in its large motor dimensions is also a language babies share with older humans. In response to pain, babies jerk, pull back, try to escape, swing their arms, use their hands to push away, and frantically scrape one leg against the other to dislodge an offending stimulus in that area. Babies strike out with their upper extremities and kick with their lower extremities. Fitzgerald and Millard (1988) made close observations of babies receiving routine heel lancing, a deep wound made in the heel to obtain blood samples. Using calibrated hairs, they gently stroked the corresponding areas in the injured and non-injured heel. All infants, including premature infants, showed the same well-defined hypersensitivity to tissue injury found in adults. Vital Signs Pain is revealed by changes in respiration and circulation. Pain causes increased respiration. Babies may hold their breath momentarily, then release it in piercing cries. Researchers have observed that infant heart rates increase 50 beats per minute, peaking above 180 beats per minute in response to pain (Williamson &Williamson, 1983; Owens &Todt, 1984; Holve et al., 1983). In a study to compare behavioral states of the newborn to those of the fetus, Pillai and James (1980) discovered that the heart rate during newborn crying was unlike anything they had found in prenatal life. This racing heartbeat was unstable, often reaching peaks in excess of 200 beats per minute in spite of the fact that baseline heart rates after birth are generally 20-30 b.p.m. lower than they are in utero. These extremely elevated heart rates signal serious disturbance. Hormonal Changes Objective measurements of blood and body fluids clearly reflect adjustments to pain and stress. Serum cortisol is such a measurement. In painful conditions, adrenals may release cortisol three to four times the baseline rate (Talbert et al., 1975; Gunnar et al., 1981,1985; Stang et al., 1988). Cortisol levels clearly differentiated between three different surgical techniques of circumcision (Gunnar et al., 1984). Under painful conditions, tissue and blood oxygen levels drop (Rawlings et al., 1980). Dramatic shifts of beta-endorphin production also accompany invasive medical procedures or environmental upset. Neurobehavioral Assessments Further consequences of infant pain can been seen in neurobehavioral measurements. Babies who have been subjected to pain have difficulty quieting themselves. Following circumcision, the normal progression of sleep cycles is reversed, reflected by an immediate and prolonged plunge into Non-REM sleep (Emde et al., 1971). After circumcision, babies withdraw, change their social interactions with then- mothers, and modify their motor behavior (Dixon et al., 1984) just as they do with any serious injury or shock. Als, Lester, and Tronick (1982) developed an instrument for systematically observing early behavior (Assessment of Preterm Infants' Behavior), including those indicative of stress and defense. Some of these are: seizuring, tremoring, spitting up, trunk arching, finger-splaying, fisting, squirming, refusing consolation, and becoming unable to rest. Memories Finally, we know that newborns feel pain because of their reports of painful experiences after they have acquired the ability to speak. At age two, my granddaughter, still remembering her birth, asked "Why did they poke me with a thing?" Her mother asked, "What thing? "Like a pencil," she said, "they hurted me." She could have been referring to the injection of Vitamin K or to the heel lancing routinely done in American hospitals to obtain blood samples. Various studies have shown that lancing is always painful (Owens &Todt, 1984; Grunau &Craig, 1987; Fitzgerald &Millard, 1988). Other spontaneous memories of painful experiences surrounding birth are documented in chapter seven of my book, The Mind of Your Newborn Baby (1998). Both children and adults have these spontaneous memories of birth trauma. Three men have told me they have always remembered being circumcised as newborns. Keith, of Dallas, Texas, remembers being born with an open abdomen. He says he has always remembered this surgery and the emotions he felt at the time. We may not like to think babies remember pain, but they do. MORE PAINFUL BIRTH Ironically, in the hands of 20th century physicians, birth has become more painful for babies. Generally, doctors have not been concerned about babies' pain. They have been concerned about heart rate fluctuations signaling fetal distress but not about neonatal pain. Increased Pain of Birth in Hospitals In the last half century, hospital birth has become the standard birth, touching 95% of persons born in the United States. From a baby's point of view, it is a gauntlet of medically-caused pain: scalp wounds to install

fetal heart electrodes, scalp blood samples during labor, use of forceps or vacuum extractions for delivery (made more frequent by the choice of epidural anesthetics), abrupt spacial disorientations like being rushed through space or being held upside down by the heels, spinal strain in meeting flat surfaces, contact with frigid scales and metal utensils in a room 30 degrees lower than the womb, assault by bright lights, noises, needle injections and heel lancings, application of stringent eye medications, painful wiping and washing of the skin, capped off by sudden separation from their mothers and banishment to nurseries full of crying babies-all distinctly painful and distressing to the newborn! Yet obstetricians defend these practices as obviously necessary and as "the best of care." Pain in the Womb Even prior to birth, conditions exist which can provoke crying. Whenever air is available to the fetal larynx, it is possible to hear a fetus cry. Vagitus uterinus (literally, squalling in the womb), a rare phenomenon which is well-documented over many years, is a dramatic signal of fetal anguish (e.g., Graham, 1919; Ryder, 1943; Russell, 1957; Thiery et al., 1973). Virtually all modern cases of fetal crying are subsequent to obstetrical manipulation such as tests, versions, deliberate rupture of the amniotic sac, attachment of scalp electrodes, or taking scalp blood samples, all while a baby is still in the womb or the birth canal. The fact that 20% of these squalling babies died is testimony to the urgency of their cries (Ryder, 1943). Recent research featuring precise monitoring of body fluids during fetal surgery has confirmed that pain perception is already present in utero. Giannakoulopoulos and colleagues (1994) studied 40 fetuses during intrauterine transfusions, finding Beta-endorphin increases of 590% and Cortisol increases of 183% during the invasive procedure. Even the youngest babies who were 23 weeks gestational age (g.a.) showed similarly large rises in these stress-response hormones. Parents whom we know told us about their little Claire at 16 weeks of gestation. She reacted strongly to amniocentesis and showed extraordinary anticipation of danger. As her parents, the doctor, and the ultrasound technician watched the needle enter the womb, Claire's hand came up and batted the side of the needle! When the needle entered the womb a second time, her hand again batted it away. It took an hour to get the sample of fluid, leaving both men in a nervous sweat and the mother saying, "I'm not sure we should have done that." Pain of Neonatal Intensive Care Premature and dangerously ill newborns face pain and peril trying to complete gestation in a neonatal intensive care unit (Kellman, 1980; Perlman &Volpe, 1983; Marshall, 1989). For a comprehensive review of the multiple stresses babies face in this man-made womb, see Gottfried and Gaiter (1985). In the NICU, pain is a way of life for babies who are tied or immobilized while breathing tubes, suction tubes, and feeding tubes are pushed down their throats (Marshall, 1989). Tubes, needles, and wires are stuck into them; their delicate skin is easily burned with alcohol prior to venipuncture or accidentally pulled off when adhesive monitor pads are removed (Harrison, 1990; Peabody &Lewis, 1985). The overwhelming need for gentle and maternal interactions with these premature babies is only partly met (Rice, 1977; Whitelaw, 1990; Luddington-Hoe &Gallant, 1993). Psychological strategies and principles of care, urgently needed in this intensely technological environment, are slow in making an appearance (e.g., Sexon et al., 1986; Field, 1990, 1992; Als et al., 1994). Life in a NICU has been described as a "mixed blessing" (Guillemin &Holmstrom, 1986) and presents agonizing problems of public health policy and medical ethics (Gustaitis &Young, 1986). For the babies-as many as 400,000 per year-the political is entirely personal, and extremely painful. Pain of Surgery Without Anesthesia Hospitalized newborns, from premies of 26 weeks upward, have routinely faced surgery without benefit of pain-killing anesthetics. Although surgery without anesthetic was standard practice for a century, it was unknown to the general public until 1985 when a few parents discovered their seriously ill premature babies had suffered through major surgery with no anesthetic (Lawson, 1986a, 1986b, 1988; Harrison, 1986, 1987). Instead, the babies had typically been given a form of curare to paralyze their muscles for surgery, making it impossible for them to lift a finger or make a sound in protest! Jill Lawson reported that her premature baby, Jeffrey, had holes cut in both sides of his neck, another in his right chest, an incision from his breastbone around to his backbone, his ribs pried apart, and an extra artery near his heart tied off. Another hole was cut in his left side for a chest tube-all of this while awake, paralyzed, and feeling intense pain and terror! The anesthesiologist who assisted explained, "It has never been shown that

premature babies have pain" (Lawson, 1986b). The operation Mrs. Lawson was describing is the most common surgery done on premature babies, thoracotomy for ligation of patent ductus arteriosus (PDA). Experts taught that this surgery could be "safely accomplished with oxygen and pancuronium as the sole agents" (Wesson, 1982). After the parents told their story to the television, radio, and print media, the ethics of these centuryold practices was seriously discussed for the first time (Harrison, 1987; McGrath &Unruh, 1987; Cunningham-Butler, 1989; Cunningham, 1990; Lawson, 1990). Resisting change, some doctors continued to argue that "following major operations, most babies sleep," and "all we need to do is feed them ..." (e.g. Campbell, 1989: 203-204). Surveys taken of policies and practices of infant surgery hi the United Kingdom and in the United States revealed the historic ambivalence about whether infants really needed anesthesia or would be endangered by it (Purcell-Jones et al., 1988; Tohill &McMorrow, 1990). Although some hospitals reported twenty years of successful use of anesthesia with infants (e.g. Berry &Gregory, 1987), surveys of common practice showed infrequent use of anesthesia and a lack of policies and protocols on the subject in hospitals (Franke et al., 1986; Bauchner et al., 1992). Key medical objections to infant anesthesia, namely, that it was unnecessary and dangerous, were finally put to rest by a series of studies by Kanwal Anand and colleagues at Oxford University from 1985-1987. Making precise and comprehensive measurements of infant reactions to surgery, they proved that babies do perceive pain, need and tolerate anesthesia well-and had probably been dying of metabolic and endocrine shock following unanesthetized operations (Anand &Aynsley-Green, 1985; Anand, 1986; Anand &Mickey, 1987). When these findings arrived in the midst of the parent rebellion against unanesthetized infant surgery, medical resistance crumbled and official bodies of physicians began to acknowledge the need for change. Eventually they promised to give neonates the same consideration in surgery as they gave to other patients (e.g., see Poland et al., 1987)-ending over 100 years of medical discrimination against babies. This was a milestone for medicine, but not a guarantee. Historically, announcement of a new policy by a guild has not always affected the practice of individual members (Patel, 1982). THE SELLING OF CIRCUMCISION While male circumcision is an example of surgery without anesthesia, circumcision is still commonly performed without benefit of anesthesia-a glaring example of the continuing denial of infant pain. In a 1993 survey of family doctors in Ontario, Canada, 43% were conducting circumcisions but only one out of four were using anesthetic. Half still held the belief that anesthetics were unsafe and 35% believed babies did not remember circumcision (Wellington &Rieder, 1993). Circumcision originated at least 6,000 years ago as a tribal and religious identity symbol in Semitic cultures. The ballooning of the practice in 20th century America was the work of pediatricians and obstetricians who gave it new status as a "medical" procedure. Circumcision also received a big lift from a wealthy layman, John Harvey Kellogg, founder of the cereal company, who was obsessed with the evils of masturbation and advocated circumcision as the solution. Kellogg's book, Plain Facts for Old and Young urged parents to have their boys circumcised without anesthesia-because the pain would have a "salutary effect upon the mind"-and was as common in American homes at the time as his corn flakes. Taking a sharply opposing view, psychohistorian Lloyd DeMause (1991) finds in circumcision one of the numerous acts of genital mutilation and violence perpetrated on infants and children in virtually every culture since the earliest times. Because it involves sexual mutilation in the family circle, DeMause claims it falls into the category of "incest" and should be seen as "an adult perversion." Other modern critics have labeled it a "betrayal of the innocent" and a "breech of trust" (Grimes, 1978; Janov, 1983). Anesthesiologist John Scanlon (1985) simply calls it "barbarism." Nevertheless, a century ago, the medical view held sway and circumcision swept through the male population. Medical circumcision became a uniquely American phenomenon. About 80% of the world's population never adopted the practice: This includes most of Europe, and populous countries like Japan, China, and Russia. Researcher Edward Wallerstein (1995) refers to circumcision as an American medical "enigma." Urologist Paul Snyder estimates that 90% of American males currently living were initiated into life in this violent way. Circumcision is where sex and violence first meet. Swiss psychoanalyst Alice Miller (1983) sees in this kind of cruelty the roots of social violence. The current

national average for the surgery is still about 60% and touches the lives of over one million baby boys each year. Leading the crusade for circumcision over a century ago, the physician P. C. Remondino (1891) called the prepuce "a malign influence causing all manner of ills, unfitting a man for marriage or business and likely to land him in jail or a lunatic asylum." According to him, "circumcision is like a substantial and well-secured life annuity; every year of life you draw the benefit ... Parents cannot make a better investment for their little boys, as it assures them better health, greater capacity for labor, longer life, less nervousness, sickness, loss of time, and less doctor bills" (Cited in Speert, 1953:165). Dr. Remondino claimed that circumcision would cure about a hundred ailments, among them asthma, alcoholism, enuresis, and rheumatism (Wallerstein, 1985). People were afraid and gullible. Another physician of the day (Clifford, 1893) enumerated the alleged dangers of the intact foreskin. These included penile irritation, interference with urination, nocturnal incontinence, hernia or prolapse of the rectum (from a tight foreskin!), syphilis, cancer, hysteria, epilepsy, chorea, erotic stimulation, and masturbation. This was the flimsy basis for selling circumcision to America-although none of it turned out to be true. In modern times, dire warnings are still dressed in medical language pointing to the normal foreskin as the source of sexual diseases, cancer, urinary infections, and even AIDS. Yet circumcision neither causes nor cures any of these conditions. The medical compulsion to perform the operation-usually without anesthesia-continues this long legacy of pain as many physicians are still turning a deaf ear to rational arguments from within their own profession (e.g. Grimes, 1978; Wallerstein, 1985; Winberg et al., 1989; Ritter, 1992). The American record is unique. Meanwhile, as the trade nourishes, a humane trend is clearly visible in journal publications. Numerous articles have reported empirical measures of stress during circumcision, and compare procedures and anesthetics for pain (e.g., Kirya &Werthmann, 1978; Yeoman, Cooke &Hain, 1983; Pelosi &Apuzzio, 1985; Masciello, 1990). In this professional literature, one can see a growing empathy for infants, full acceptance of their pain, serious doubts about performing circumcisions, and strong recommendations for anesthetics which effectively reduce pain (Williamson &Williamson, 1983; Holve et al., 1983; Dixon et al., 1984; Stang et al., 1988; Rabinowitz &Hulbert, 1995). Perhaps this is a harbinger of what is to come, and a sign that the century of denial may be ending. A mix of cultural forces blur the future. In exploring the extent of physician influence on parental choice for circumcision, one study showed that when the doctor was opposed to circumcision, the rate fell to 20%, but when he was in favor the rate was 100% (Patel, 1966). In contrast, when four pediatricians in Baltimore did an educational experiment with pregnant mothers (Herrera et al., 1982), they were surprised at the results. While half had been taught the medical "risks and benefits" of circumcision and half received no information, virtually all the mothers opted for circumcision. The doctors concluded that deep cultural and traditional issues were working against a change in attitude in their group. Surveys examining parental motives for requesting circumcision have revealed these forces at work. Parents care about appearances, yield to pressure from relatives, and misunderstand the medical "benefits." They hold a variety of false notions that circumcision is mandated by hospitals, by public health law, or is required for admission into the Armed Forces (Patel, 1966; Grimes, 1978). Parents are not warned that their infants will endure severe pain and will be losing a functional part of their sexual anatomy. WHY INDIFFERENCE TO INFANT PAIN? The literature on infant pain is both hopeful and discouraging. An analysis of the ten most commonly used textbooks in pediatrics by Rana (1987) turned up only three and one half pages devoted to pain in 15,000 pages of text. Among the popular books about obstetrics, Frederick Leboyer's bestseller, Birth Without Violence (1975), stands virtually alone in its concern for the pain babies feel at birth. However, medical research in the area of infant pain has been rising sharply in volume. In my own collection of important journal articles, I can count only about forty studies of infant pain in the entire century ending in 1979. However, a surge of interest in the 1980's produced 100 papers in a single decade! In retrospect, we must wonder why infant pain perception was ignored for the greater part of a century. Was it Because They Were Men? Historically, men have been the surgeons and circumcisers of little babies. In society at large, men have been notoriously violent, comprising at least 90% of all persons arrested for homicide. Until recently, medicine was a male fraternity where aggressiveness and denial of feelings was

honored. Now that women are entering the profession in large numbers-trained by men and obliged to accept male beliefs and protocols-gender lines are blurring. Would a woman perform operations on babies without anesthesia? While this seems doubtful, it is a fact that female nurses are often on the scene in supporting and approving roles. Nurse anesthetists have provided the curare for operations. In the high-profile death of Jeffrey Lawson, the anesthesiologist was a woman who didn't believe pain was a factor in his surgery. Would mothers circumcise their own sons? They never have, but they have paid others to do it. In many countries on the African continent, where female "circumcision" is a tragic tradition, mothers are part of the conspiracy to mutilate their daughters. Mothers describe the brutal surgery (excision of the clitoris, sometimes the labia as well, and sewing up the vaginal opening) as necessary and harmless, which is the same way physicians have described male circumcision (see Lightfoot-Klein, 1989). African mothers are moved to action by false beliefs: they fear the clitoris would get longer and longer until it would be like a penis; they claim these female parts are ugly; they maintain that a woman's external genitalia endanger babies and husbands and contaminate mother's milk. In their view, sewing up the vaginal opening is the seal of virginity, an absolute requirement for marriage in that culture. Jill Lawson who led the campaign to shield infants from surgical pain, questioned why the doctors had not reacted as individuals to the manifestations of infant pain. Writing in the New England Journal of Medicine (May 26, 1988: 1398), she says, "I cannot help but wonder how such a situation came to develop ... If I had been told by a physician, no matter how senior, that infants don't feel pain, I would never have believed it. What constitutes the difference between my reaction and that of the thousands of physicians who did believe it?" Were They Just Trying to be "Scientific"? Were the men and women of medicine just trying to remain objective and not give in to subjective feelings? Objectivity is a scientific ideal, but when it censors feelings and niters out observations, it can lead to monstrous behavior. There is a price for blunting feelings and denying unpleasant realities. Ironically, in spite of pride in objectivity, these doctors were unable to accept the objective evidence for infant suffering presented by their colleagues. Why was it so hard for them? Why should doctors have to go to a library to find out if infants experience pain when they have seen it with their own eyes and heard it with then-own ears? Conformity within the guild? Today, with a hundred articles in the medical literature discussing infant pain and what to do about it, what explains the host of physicians who continue to cause unnecessary pain? Stubbornness? Was it Tradition? In the guild of surgeons, tradition and loyalty to one another has been a powerful force. Following tradition is the only way to enter a guild, and breaking with tradition is a sure way to get expelled. Tradition and loyalty can overpower rational judgment. These forces are sharply revealed in guild reactions to the discovery of anesthesia a century and a half ago. After the anesthetic properties of ether were demonstrated in 1846 in Boston, doctors in Baltimore and Johns-Hopkins Medical School refused to use it. They held out for seven years. Ether (and Boston medical schools) were outside the boundaries of their guild. After the acceptance of ether, surgeons developed an elaborate calculus to decide who "needed" anesthesia and who did not (Pernick, 1985). Because of this reasoning, as many as a third of amputations were still done without anesthetic! The process of selection was deeply prejudicial. Among those who did not receive anesthetic were Native Americans, Blacks, immigrant, Asians, Germans and Irish, many soldiers and sailors, "hardened" urban poor, and "tough" country women. Those who did receive it were the well-off, the well-educated, and the "artistic" urban woman. The guild knew best. Tradition! Were They Held Captive by Their Beliefs? Fundamental to the strange traditions of the guild regarding use of anesthesia was a prior set of beliefs about pain, which no doubt served them when pain was an unavoidable part of their daily regimen. Pain was considered good, necessary, an ingredient in healing, a sign of life, and perhaps even sacred. In 1872, a prominent New York gynecologist rhapsodized: "The baptism of pain and privation has regenerated the individual's whole nature ... by the chastening, made but a little lower than the angels" (Gardner, 1872, cited in Pernick, 1985: 47). He was making this lyric statement twenty-six years after the first application of ether vapors in surgery. When it came to babies, surgeons were never sure if they were among those who needed anesthesia or did not. The majority view was penned by Henry Bigelow (1893), writing in one of the first

publications of the new American Medical Association. He wrote that babies had "neither the anticipation nor remembrance of suffering, however severe," making anesthesia unnecessary for them. Like most of his colleagues then and since, Bigelow believed the ability to experience pain was related to intelligence, memory, and rationality. Like lower animals, the very young lacked the mental capacity to suffer. A view with strong similarities-that babies don't feel pain as we do-was recently asserted by a developmental psychologist (Maurer &Maurer, 1988: 33-36, 218). This matches earlier opinions that savages, Jews, or Blacks don't suffer "as we do." Yet it was not considered controversial among either physicians or psychologists. This discrimination rests on some bedrock misinterpretations of neuroanatomy. Were They Just Operating as Materialists? The fundamental dogma which kept doctors from recognizing infant pain sprang directly from anatomy: The infant brain-they could plainly see-was incomplete and therefore unprepared for true emotion, memory, learning, and meaning. Students of anatomy were convinced that the "early" brain was primitive: only the "late" brain (cerebral cortex) was capable of complex human activity and the cerebral cortex was not "complete" at birth. This interpretation opened the door to painful activities like surgery without anesthesia, became a false foundation for the rapidly developing specialty of obstetrics and the perilous trademark of neonatology. You could inflict pain on the fetus and the newborn because it would not register on them. In retrospect, the error of this medical thinking (which psychologists copied) was to reduce the definition of a human being to brain matter alone. Matter is who you were, and especially brain matter: If you didn't have the requisite brain matter, you did not matter. Without fully developed brain matter, you could not be a self, could not have feelings, experiences, knowledge, or personality-all the things which babies were not supposed to have but which have now been documented about babies by modern research. For reviews, see Chamberlain, 1992, 1998. Along with research on adult states of consciousness, research with babies is pushing us toward a larger paradigm to describe who we are. By thinking too narrowly about babies, professionals missed discovering them as persons with a range of innate capacities associated with human consciousness (e.g., Flavell, 1977; Kagan, 1981). Because babies could not "think," the mortification of the flesh was acceptable, and even opportune. Treating infants as de-corticate non-persons without the possibility of keen awareness, a directing intelligence, and a sense of self, led doctors into unintentional abuse. Was Denial the Easy Way Out? The reductionist philosophy of materialism led not only to violations of dignity and needless suffering, but also to clinical judgments which were superficial. Doctors failed to appreciate the complex, whole babies confronting them. When assessing the impact of surgery without anesthesia, physicians saw babies fall asleep after surgery and concluded they were all right. If a pale baby regained color or if blood pressure returned to normal 24 hours after surgery, surgeons felt justified in what they had done. This was actually wishful thinking, as Anand (1986) was able to demonstrate. Overly simple criteria were used to evaluate the effect of powerful anesthetics on the babies whose mothers had received them. Doctors contended that the babies were unaffected, or soon back to normal. The truth of what was happening to the babies took years to determine (see Brackbill et al., 1985; Mirmiran &Swaab, 1992). The pediatrician chairing the Task Force on Circumcision of the American Academy of Pediatrics said of circumcision that "responses are short-lived, lasting only minutes to hours, and there is no evidence of long-term sequelae" (Schoen et al., 1989: 389). In fact, the circumcision wound could not possibly heal in a few hours, and the foreskin would be lost for life-a truly long-term "sequelae." Six years later, Taddio and colleagues (1995) reported significantly different reactions of circumcised and intact boys to vaccinations four to six months after birth. Their pain "scores" showed the circumcised boys to have lower pain thresholds, presumably related to their earlier trauma. They cried longer and harder in reaction to vaccination than the boys who had been left intact. Their reactions worsened with the second vaccination, emphasizing the long-term effect of their circumcision injury. Obstetricians and pediatricians were likewise naive about the suffering of infants and mothers they routinely separated after hospital delivery. They could see neither the biological wisdom nor the psychological importance of the mother-infant pair, and delayed full acceptance of bonding and its long-term advantages (Sugarman, 1977; Klaus et al., 1976, 1995). Psychobiology is further illuminating the long-term

sequelae of early trauma. Probing the inner chemistry of trauma, Bessel van der Kolk (1987) writes of the serious changes in hypothalamic serotonin, adrenal gland catecholamines, synthesizing enzymes, plasma cortisol, heart rate, body temperature, and sleep. "These changes are not transient or mild," he writes, "and their persistence suggests that longterm neurobiological alterations underlie the psychological effects of early separation" (p. 43). According to this expert, disruptions of attachment during infancy help pave the way toward mental illnesses featuring a bi-phasic protest/despair behavior and erratic activity of neurotransmitters. Early trauma leads into panic attacks and cyclical depressions, which reflect a loss of faith in the order and continuity of life, and loss of a safe place from which to deal with frightening emotions. The ultimate legacy of prenatal and perinatal trauma is angry, rebellious behavior, which is all too common today, and feelings of fear, anxiety, and depression-the burgeoning illnesses of our time. IS THE CENTURY OF DENIAL, ENDING? If indifference to infant pain ends any time soon, it will probably be due to the timely convergence of at least five forces which are already at work. Controlled Research in Appropriate Depth and Longitude Neurochemistry, psychobiology, and endocrinology now afford study of deep reactions which may be able to convince us of the reality of the infant's sensitivity and responsiveness to both the prenatal and birth environment. Ultrasound observation is revolutionizing prenatal psychology by providing a direct view of intrauterine activity, exposing an unpredicted world of social interactions. For some professionals, seeing is believing. For others, the denial continues. Well-controlled longitudinal studies of infant pain and its sequellae would certainly help to replace dogma with information. The followup study of circumcision at vaccination time by Anna Taddio and colleagues (1994) has drawn serious attention to long-term consequences of circumcision. Longitudinal studies of the survivors of neonatal intensive care is bringing good news and bad news about this painful initiation into the world. I think it would help to see if there are later violence problems associated with the prolonged pain of neonatal intensive care. A Consumer's Revolt Women are waking up to the reality of circumcision as a trauma which cannot be justified by the alleged "benefits." They are learning from bitter experience that blind reliance on medical advice cannot substitute for their own parental responsibility. (The best cure for parental denial would be to attend circumcisions.) Even Jewish mothers are rebelling against circumcision by creating alternative rituals. They are learning to resist the considerable pressure brought upon them by relatives. Consumers are being energized by information persistently circulated to all interested parties by NOCIRC, a national resource center in San Anselmo, California. Men have started their own movement, finally realizing they were robbed of their foreskins with no opportunity to give consent. Some are seriously trying to retrieve them by a challenging process of foreskin restoration (Bigelow, 1992). Circumcision is framed as a human rights issue in a new video "Whose Body, Whose Rights?" produced by NOHARMM in San Francisco. Local and Global Legislative Activism The recent formulation and ratification of human rights documents on an international scale has been a catalyst to call attention to familiar forms of abuse and to create universal ideals. In this way, nations are being pressed to raise standards and conform to norms agreed upon by the family of nations. Of recent origin are the United Nations Declaration of Human Rights, and the United Nations Convention on the Rights of the Child. In the latter, Articles 19 and 37 call upon governments to protect children from physical injury and abuse, torture and cruel treatment, and from harmful traditional practices (Article 24). Inevitably, citizen activists will challenge institutions to meet these global ideals. A group recently presented a petition to the World Court, The Hague entitled: The Ashley Montagu Resolution to End the Genital Mutilation of Children Worldwide. Removing the Economic Incentives Taking the money out of circumcision causes a precipitous drop in its popularity. In England, circumcision rates had declined steadily following a series of journal articles by doctors (e.g., Gairdner, 1949) but when the national health service decided not to pay for it any more, it was the death of circumcision. In the cost-cutting environment of current medicine, some large insurers like Prudential and State divisions of Blue Shield have already decided that circumcision is a poor use of funds. Others are sure to attack an archaic ritual which drains health care funds by $100 million dollars a year. Activists are now questioning administrators of State Medicaid Funds about their circumcision policy and advocating its removal from the list of reimbursable

surgeries. A Revolt of Nurses and Doctors Themselves In Australia, the opposition of doctors to circumcision has radically lowered its occurrence; the rate in neighboring New Zealand is virtually zero. In Santa Fe, New Mexico, a group of nurses recently took a stand as "conscientious objectors" to circumcision. They were able to negotiate a legally-binding "Memo of Understanding" with the hospital which allows them to continue in their jobs while not participating in circumcisions. Their story attracted national and international support and resulted hi a video documentary, "The Nurses of St. Vincent: Saying No to Circumcision." It may inspire similar rebellions elsewhere. And finally, an organization of strong-minded Doctors Opposed to Circumcision (D.O.C.), with headquarters in Seattle, is out looking for members. Since doctors unleashed the dragon of circumcision on the American public, it would seem especially appropriate for them to help slay it. IN CONCLUSION Pain is a universal language which can be readily understood by its vocal sounds, facial expressions, body movement, respiration, and even color. Babies speak this language as well as anyone. Pain can also be confirmed by metabolic and hormonal measurements, which are as real for babies as for adults: age confers no immunity. If anything, early trauma is probably more serious than later trauma because it establishes basic patterns and hormonal set points for later experiences. The myth that prenates and neonates have insufficient brain development to experience, remember, and learn from trauma is ancient, insidious and harmful. The pain-inflicting technological protocols of routine obstetrics, pediatrics, and neonatology should all be reassessed with the goal of eliminating them where ever possible. Circumcision should not be routinely performed. And although it means a sharp break with a century of medical tradition, no surgeries should ever be performed on babies without anesthetic. At the end of the twentieth century, increasing public awareness that babies are sentient beings suggests that the century of denial of infant pain may be ending. If these promising trends continue, we may hope that for future generations, the infliction of pain on unborn and newborn babies will be an exception rather than the rule. Footnote * This paper was first presented to the second International Symposium on Circumcision held in San Francisco, April 1991. A revised version can be found in Robbie Davis Floyd and Joseph Dumit (Eds.), Cyborg babies: From techno-sex to techno-tots (Routledge: New York and London, 1998). References REFERENCES Als, Heidelise, Lester, Barry M. and Tronick, Edward Z. (1982), Manual for the Assessment of Preterm Infants' Behavior. In Hiram E. Fitzgerald, Barry M. Lester, and M. W. Yogman (Eds.) Theory and Research in Behavioral Pediatrics (pp. 65-132). New York: Plenum. Als, H., Lawhon, G., Duffy, F. H. McAnulty, G. B. Gibes-Grossman, R. and Blickman, J.G. (1994), Individualized Developmental Care for the Very Low Birthweight Preterm Infant: Medical and Neurofunctional Effects. J. American Medical Association, 272(11): 853-858. Anand, K. J. S. and Aynsley-Green, A.(1985), Metabolic and Endocrine Effects of Surgical Ligation of Patent Ductus Arteriosus in the Preterm Neonate: Are There Implications for Further Improvement in Postoperative Outcome? Modern Problems in Paediatrics, 23:143-157. Anand, K. J. S. (1986), Hormonal and Metabolic Functions of Neonates and Infants Undergoing Surgery. Current Opinion in Cardiology, 7:681-689. Anand, K. J. S. and Hickey, P. R. (1987), Pain and It's Effects in the Human Neonate and Fetus. New England J. Medicine, 317 (21): 1321-1329. Bauchner, H., May, A. and Coates, E. (1992), Use of Analgesic Agents for Invasive Medical Procedures in Pediatric and Neonatal Intensive Care Units. J. of Pediatrics, 121(4), 647-649. Berry, Frederic A. and Gregory, George A. (1987), Do Premature Infants Require Anesthesia for Surgery? Anesthesiology, 67(3): 291-293. Bigelow, Henry J. (1893) , Transactions of the American Medical Association, 1:211. Cited by Pernick (1985). Bigelow, Jim (1992), The Joy of Uncircumcising! Aptos, CA: Hour Glass Publishers. Blanton, Mary G. (1917), The Behavior of the Human Infant in the First 30 Days of Life. Psychological Review, 24(6): 456-483. Boyd, Billy Ray (1990), Circumcision: What it Does. San Francisco: Taterhill Press. Brackbill, Yvonne, McManus, Karen and Woodward, Lynn (1985), Medication in Maternity: Infant Exposure and Maternal Information. Ann Arbor, MI: University of Michigan Press. Campbell, N. (1989), Infants, Pain, and What Health Care Professionals Want To Know-A Response To Cunningham-Butler. Bioethks, 3(3): 200-210. Chamberlain, David B.(1992), Babies Are Not What We Thought: Call For A New Paradigm. International J. Of Prenatal and Perinatal Psychology and Medicine, 4(3/4), 161-177. Chamberlain,

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