

Cesareans don't help lowest-weight babies

The surging rate of cesarean deliveries – which now account for one in four U.S. births – may be leveling off, but it remains especially high in one category of babies: those weighing 1 to 3 pounds. A new epidemiologic study leads researchers to question the value of surgical delivery for these tiny babies.

Michael H. Malloy and his co-workers at the National Institute of Child Health and Human Development find that cesareans improve the survival chances of these babies only during their first 24 hours. After that, tiny infants delivered surgically have a higher death rate than those delivered vaginally. By the end of one week, no significant survival differences remain, the researchers report in the Sept. 15 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

The team studied birth and death certificates of 3,095 very-low-birthweight babies born in Missouri from 1980 through 1984. Missouri's statistics for cesareans and low-weight births resemble overall U.S. statistics, Malloy says.

During the study period, the percentage of cesarean deliveries rose most dramatically – from 9 percent in 1980 to 27 percent in 1984 – among newborns weighing 1 to 1.5 pounds, the lowest weight category studied. This group also seemed to derive more initial benefit from surgical delivery than did the other weight groups studied. About 67 percent of the C-section babies in this category survived their first day, compared with about 41 percent of those delivered vaginally. But on the second through sixth day, the chance of a C-section baby dying jumped to twice that of a vaginally delivered baby. Among infants weighing 1.5 to 3 pounds, delivery methods did not significantly affect overall survival.

The enhanced first-day survival among the tiniest babies may not result from their surgical delivery, Malloy says. "It may not be so much a function of the cesarean section that prolongs the survival of these kids through the first day as it is the availability of resuscitation teams at the time of delivery," he says.

But because the researchers could not verify the presence of resuscitation teams, that conclusion may be unwarranted, says Sharon L. Dooley of Northwestern University Medical School in Chicago. In an editorial accompanying the new report, Dooley emphasizes the study's retrospective nature and the fallibility of birth and death certificates as accurate records. "In spite of all those problems," Dooley told *SCIENCE NEWS*, "their analysis was keen and their thesis was right on – namely that they showed no benefit of cesarean section" to very-low-birthweight infants. – S. Hart

Silver supports superconducting paste

Like children in front of a closed candy store, superconductor scientists have their noses pressed against the window of a largely inaccessible technology sweet-shop. Since the 1987 announcement of ceramic compounds that superconduct at liquid-nitrogen temperatures, visions of cheaper, cleaner energy production, magnetically levitated trains and exotic technologies have filled scientists' imaginations. But visions these will remain until researchers find reliable ways to transform the brittle, rock-like materials into more rugged, practical forms such as superconducting wires.

Silver may provide an answer, according to scientists at the Argonne (Ill.) National Laboratory. Grinding silver powder with the superconducting ceramic material and mixing these ingredients with methanol or isopropyl (rubbing) alcohol yields a slurry that the researchers spread evenly onto paper-thin ribbons of silver foil. Before firing the composite into its final, hardened form, the scientists can bend it, even into coils. The heat treatment joins the two layers of the assembly by causing silver particles in the slurry to bond with the silver of the ribbon backing. The metal fills tiny cracks that form during processing and also can shuttle current through or around such imperfections, the researchers say.

"At this stage, we are toying around," remarks Argonne's Balu Balachandran. The crude, silver/superconductor composite cannot yet carry enough current to serve much practical purpose, he says. Still, he adds, the project shows there are ways of working ceramic materials into complex shapes and gives reason to believe that some of the fantastic visions for superconductors may become reality.



Argonne

Clot-busters bring bioelectrical benefits

A tiny blood clot lodges in a coronary artery, interrupting the flow of oxygen-rich blood to the heart. Quick work by emergency physicians armed with clot-busting drugs or other vessel-opening techniques restores the crimson flow, salvaging suffocating heart muscle that would otherwise die within minutes. But beyond the obvious advantages of renewed gas exchange and the flushing away of toxic metabolic by-products, rapid restoration of blood flow to heart muscle may provide other benefits.

New research indicates that vessel-opening strategies can also prevent potentially fatal abnormal electrical patterns in cardiac muscle – patterns common in the weeks and months following a heart attack.

In recent years, researchers have recognized that patients who get vessel-opening drugs such as tissue-plasminogen activator (tPA) seem to have a lower incidence of ventricular tachyarrhythmia – dangerously rapid and uneven heart rhythms – and sudden death following a heart attack. But they weren't sure why.

Eli S. Gang, Allan S. Lew, Thomas Peter and their colleagues at the Cedars-Sinai Medical Center in Los Angeles investigated the association using an increasingly popular kind of electrocardiogram machine capable of measuring

"ventricular late potentials." Late potentials are abnormal bioelectric bursts that have been associated with ventricular tachyarrhythmia and sudden death. The researchers tracked the electrical fates of 44 heart attack survivors who received tPA and 62 controls who received conventional heart attack treatments that did not include any vessel-opening procedure. None of the patients whose vessels reopened after tPA – and only 14 percent of the controls whose vessels spontaneously reopened – showed signs of late potentials.

In comparison, about one-third of the patients whose vessels remained partly blocked showed late potentials on their electrocardiograms. Statistical analysis suggests vessel opening in general, and not tPA *per se*, may hold the key to restoring organized electrical conductivity in the heart, the researchers report in the Sept. 14 *NEW ENGLAND JOURNAL OF MEDICINE*.

The precise mechanism by which renewed blood flow enhances proper electrical conductance remains unclear, and the researchers have yet to compile data on the patients' long-term incidence of tachyarrhythmia and sudden death. Nonetheless, they conclude, the improved electrical outlook highlights the importance of rapid vessel opening for many heart attack patients. – R. Weiss