

New technique uses umbilical cord stem cells for early repair of cleft palate

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A technique using umbilical cord blood stem cells could be a promising new approach for repair of cleft palate in infants, reports a paper in *The Journal of Craniofacial Surgery*.

Performed as part of reconstructive [surgery](#) when the infant is a few months old, the stem cell procedure provides good results in growing new bone to close the upper jaw [cleft](#)—and may avoid the need for later bone graft surgery, according to the case report by Alejandro Garcia Botero, MD, of Hospital De San José, Bogota, Colombia, and colleagues.

Stem Cells Could Be New Option for Closure of Alveolar Cleft

Dr. Botero and colleagues report their experience with the stem cell procedure in an infant with cleft lip and palate, diagnosed by ultrasound before birth. The baby girl had an alveolar cleft, involving an area of bone where teeth are located.

Immediately after delivery, a sample of the infant's [umbilical cord blood](#) was collected to isolate stem cells, which were processed and frozen to preserve them for later use. Umbilical cord blood is a rich source of various types of stem cells, which have the potential to develop into many different types of specialized cells, including bone and cartilage.

"Since the age is that of the newborn, [umbilical cord stem cells] have a greater potential to regenerate the organism," Dr. Botero and coauthors write. For the first few months, the infant underwent a nonsurgical "nasalveolar shaping" procedure to align the soft tissues of the upper jaw.

At age five months, the stem cells were thawed for use as part of "boneless bone grafting" surgery (gingivoperiostoplasty). The stem cells were placed in a pocket of soft tissue bridging the gap in the upper jaw. A small piece of absorbable

biomaterial (Gelfoam) was used a scaffold to guide growth of new bone across the [cleft palate](#). This procedure was performed at the same time as surgery to correct the cleft lip (cheiloplasty).

Follow-up confirmed formation of new bone to close the cleft palate, providing good position and support for normal eruption of the teeth. Imaging scans when the patient was five years old showed good thickness of the upper jaw bone in the area where the cleft had been.

A major potential advantage of the stem cell procedure is avoiding the need for later bone grafting surgery—currently the standard technique for closing the cleft. This procedure uses bone taken from elsewhere in the child's body, typically the hip. Bone grafting has potential complications and subjects the child to one or more additional surgeries.

The study is the first to use stem [cells](#) as part of primary surgery to repair cleft palate in an infant. Dr. Botero and colleagues note that their patient will need further monitoring to ensure adequate bone thickness in the [upper jaw](#). The researchers emphasize the need for further studies evaluating their stem cell technique in a large number of patients—including steps to confirm that bone formation results from the [stem cells](#), and not from the initial "boneless [bone graft](#)" surgery.

More information: Marcelo Paulo Vaccari Mazzetti et al. Importance of Stem Cell Transplantation in Cleft Lip and Palate Surgical Treatment Protocol, *Journal of Craniofacial Surgery* (2018). [DOI: 10.1097/SCS.00000000000004766](https://doi.org/10.1097/SCS.00000000000004766)

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