

without gastrointestinal perforation; proven or suspected abdominal obstruction; pneumoperitoneum;... or drug addicted mother.”

The study group received standard pediatric care plus 2 OMTh sessions per week for the total time in hospital. Each OMTh session was 20 minutes and used indirect myofascial release, balanced ligamentous tension, and balanced membrane tension to normalize dysfunctions of the cranium. The control group received standard pediatric care and 2 osteopathic structural evaluations per week. The evaluation took 10 minutes, then the osteopath stood in front of the incubator or open crib for 10 minutes “to further assist in blinding the ancillary NICU staff.” There were no dropouts during the trial, and no adverse events were recorded.

Both groups were well matched on all neonatal and maternal characteristics. The primary outcome of hospital length of stay (LOS) analyzed by univariate analysis showed mean (SD) LOS as 14.4 (3.6) days for infants in the study group and 17.0 (8.7) for those in the control group ($P<.01$). Also of significance was a linear regression model evaluating the time frame in which OMTh was initiated: 0 to 4 days, 0 to 9 days, or 0 to 14 days. The earlier the OMTh was started, the shorter the LOS ($P<.001$).

Also evaluated were the relative costs of preterm infant care. Although the actual costs between study and control patients were not significant for the patients in this study, ordinary least square regression taking into account all the relevant variables showed that OMTh produced a significant cost saving of €740 per newborn ($P=.01$).

The authors noted the limitations, which were that these data are from 1 hospital and thus may have limited generalizability and that the cost estimates are theoretical. However, this was a well-designed study and is a useful contribution to the research literature. (doi:10.7556/jaoa.2016.013)

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As the Twig Is Bent, so Grows the Tree—Part 6: In a Multicenter Study, OMTh Shortens Length of Stay in the Neonatal Intensive Care Unit

Cerritelli F, Pizzolorusso G, Renzetti C, et al.

A multicenter, randomized trial of osteopathic manipulative treatment on preterms. *PLoS ONE*.

2015;10(5):e0127370. doi:10.1371/journal.pone.0127370.

Expanding on previous published studies on the effect of osteopathic manipulative therapy (OMTh; manipulative care provided by foreign-trained osteopaths) on preterm infants in the neonatal intensive care unit (NICU),¹⁻³ Italian researchers replicated these previous studies in a 3-site multicenter study. A total of 695 newborns were randomly assigned to the study group ($n=352$) or control group ($n=343$). Inclusion criteria were gestational age between 29 and 37 weeks without congenital complications. Exclusion criteria included lack of parental consent; any genetic disorder; neoplasms; neurologic, cardiovascular, urinary, or hematologic abnormalities; proven or suspected necrotized enterocolitis or abdominal obstruction; birth trauma; operation; pneumoperitoneum; atelectasis; HIV; newborn from an HIV-seropositive or drug-addicted mother; and transfer status to or from another hospital.

The study group received standard pediatric care plus 2 OMTh sessions per week for the total time in the hospital. Each OMTh session was 30 minutes: 10 minutes for evaluation and 20 minutes for treatment. Myofascial release, balanced ligamentous tension, and balanced membrane tension were used. The control group received standard pediatric care and 2 osteopathic structural evaluations per week. The evaluation took 10 minutes, and then the osteopath stood in front of the incubator for 20 minutes with his or her hands near but not touching the infant “to maintain blinding of the NICU personnel.” There were no perinatal deaths in either group, and no adverse events were recorded.

The primary outcome of mean (SD) hospital length of stay (LOS) was 13.8 (8.1) days for the study group and 17.5 (14.5) days for the control group ($P<.001$). Gestational age was associated with LOS ($P<.001$), as was birth weight ($P=.02$). The cost per newborn was €6277.28 for the study group and €7863.29 for the control group, which was a significant difference ($P<.001$).

As a multicenter study, these data are strong and confirm previous findings of the benefit of OMTh in the NICU. This study should be replicated in the United States. (doi:10.7556/jaoa.2016.014)

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As the Twig Is Bent, so Grows the Tree—Part 7: Severe Temporal Bone Restriction in Children Is Risk Factor for Acute Otitis Media

Morin C, Dorion D, Moutquin J, Levasseur M. Suture restriction of the temporal bone as a risk factor for acute otitis media in children: cohort study. *BMC Pediatr*. 2012;12:181. doi:10.1186/1471-2431-12-181.

Canadian osteopathic researchers carried out a prospective cohort study of 64 infants (128 ears) aged 6 to 18 months assessing whether temporal bone suture restriction was a risk factor for the development of acute otitis media (AOM).

The children were recruited from community-based recreational organizations. Inclusion criteria were no previous episodes of AOM and exclusion criteria were congenital anomalies like cleft palate or Down syndrome and any hearing problems.

Temporal bone status was assessed by Canadian osteopaths using visual observation to identify obvious displacement between temporal squamous and petrous parts and suture overlapping and manual examination of each temporal bone. Each temporal bone was assessed for mobility of cranial concept for external and internal rotation, and severe restrictions were noted. Interrater reliability was 0.58 for right and 0.71 for left temporal bones. No osteopathic intervention was applied.

The outcome measure was the diagnosis of AOM by a physician. All children who received an AOM diagnosis received standard care. Documentation of AOM was completed by a research assistant using telephone interviews with parents every 2 months. Physicians, parents, and the research assistant were blinded to temporal bone status.

Severe temporal bone restriction was identified in 23 children (35.9%). Of these 23 children, 14 (43.3%) had at least 1 episode of AOM. Twenty-eight (28.3%) of those without severe temporal bone restriction had an episode of AOM. Higher risk of AOM was associated with restricted temporal sutures ($P<.01$), pacifier use ($P<.01$), and younger age ($P=.001$).

Strengths of this study included the population-based longitudinal prospective design, rigor of the documentation of the health status of the children, and occurrence of only 1 subject dropout. The authors acknowledge that because the families recruited for the study knew the nature of the concern for AOM, parents may have sought AOM consultation, which they may not have otherwise done. (doi:10.7556/jaoa.2016.015)

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