were expressed in number and percentages. One hundred and three infants were admitted to the NICU during the study period representing 1317 consecutive patient bed days, 52 cases in January (763 bed days) and 51 (554 bed days) in February. The comparison between the surgical and medical bed occupancy is depicted in **Table 1**. Total NICU beds occupied by surgical cases during 2 months period were 154 (11.6%) in comparison to 1163 (88.4%) by medical cases. Contrary to the common assumption, we noted that the surgical bed occupancy in our NICU is roughly one tenth of the total admission proving the allegation of 'no space' for admission in NICU. It was made clear that medical cases comprised the main bulk of NICU admission and beds. Thus, despite centralization of surgical care to one unit, bed occupancy remained unaffected putting the question of quota and rationing for surgical cases out of context. Neonatal intensive care unit beds are seldom vacant. Suggestion has been made earlier regarding strict admission criteria.[3] Others have advocated the need for increased in the NICU beds.[4] Some have shown that decentralization of NICU care is as effective as centralized care, taking care of bed problems in single tertiary unit.[5] The finding of our study provided answer to all these alternatives. Firstly, it has shown that bed occupancy from surgical cases is not high, proving that the increased need for the NICU beds relates to medical rather than surgical cases. Secondly, it clearly indicated that centralized care for surgical cases is still a valid option and no great benefits could be achieved or expected by deferring surgical transfers and managing them at regional centers (decentralized approach), as the proportion of these cases were noted to be small.

In conclusion, we have demonstrated that only small amounts of resources were consumed by the surgical cases admitted to the NICU. Expecting cost savings from further limiting surgical beds is thus not warranted.

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Which local anesthesia should be used in neonatal circumcision in newborns?

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Methemoglobinemia results from oxidation of ferrous iron (Fe2+) to ferric iron (Fe3+), and renders the hemoglobin molecule unavailable for oxygen transport, resulting in potentially life-threatening hypoxemia. Under physiological conditions, methemoglobin reduction is accomplished mainly by red cell NADH-cytochrome b_5 reductase (NADH-methemoglobin reductase) thus, efficiently that there are insignificant amounts of methemoglobin in the circulating blood. These enzyme pathway is immature in the neonate, therefore this disorder may be triggered by oxidation agents such as topical anesthetics used in minor surgical procedures such as circumcision.[1,2] The local anesthetic prilocaine is a popular choice for penile blockade in circumcision owing to its short onset time and low incidence of cardiac and central nervous system toxicity. However, prilocaine is the most potent methemoglobin forming local anesthetic.

Circumcision was performed in 15 and 3–day–old neonates in other medical centers using the standard surgical technique. Prilocaine was administered subcutaneously in a dose of 5 mg/kg around the radix of the penis and no complication was observed in both patients. They developed perioral cyanosis one and a half hour and 3 hours after the circumcision respectively and succeeding central cyanosis was seen. The pregnancies and deliveries were unremarkable. The physical examinations revealed no other abnormality. Their cyanosis persisted and transcutaneous oxygen saturations were 89% and 91% with supplemental oxygen. Complete blood cell counts, arterial blood gases and chest x–rays were all normal. Electrophoresis revealed methemoglobin levels of 9.9% and 13%

respectively. Methylene blue was infused intravenously in a dose of 1 mg/kg diluted to 1% in normal saline in both patients. The symptoms resolved completely in an hour and methemoglobin levels returned to normal (2.4% and 1.4%) in 12 hours.

Methemoglobinemia is a condition characterized by increased quantities of hemoglobin in which the iron of heme is oxidized to the ferric (Fe3+) form. This disorder may be triggered by topical anesthetics used in circumcision, especially prilocain.[1,3-5] Newborn babies are particularly susceptible as methemoglobinemia is related to high levels of fetal hemoglobin, which is more readily oxidized to the ferric state than is hemoglobin A. Also, the transient deficiency of cytochrome b_5 reductase enzyme activity that persists for the first 3–4 months of life favors the development of methemoglobinemia in neonates. Cyanosis is first clinical evident when methemoglobin levels of ≥10%, but symptoms of hypoxemia and diminished oxygen transport do not appear until levels increase to 30-40%. Levels >70% may cause death.[2] In our patients, cyanosis occurred approximately 10% levels of methemoglobin, and they did not show signs of tissue hypoxia (mottled appearance, paleness, decreased peripheral perfusion, increased negative base excess).

O-toluidine which is prilocaine's main metabolites is responsible for methemoglobinemia. In neonate, methemoglobinemia has been reported after prilocaine penile ring blocks in circumcision. Methemoglobinemia after the use of EMLA® cream (a eutectic mixture of lignocaine and prilocaine) has been reported in previously.[4] However, in a double-blind, randomized, placebo controlled trial; no change has been found in blood methemoglobin concentrations after the use of EMLA cream.[5]

Circumcision is widely used in many countries due to religious tradition. Therefore in conclusion, during the process of circumcision performed after the first 3-4 months, the use of EMLA® cream as local anesthetic instead of penile blockade with prilocaine reduces the risk of methemoglobinemia and favors its outcome.

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