

## Robert Gherman on the McRoberts maneuver

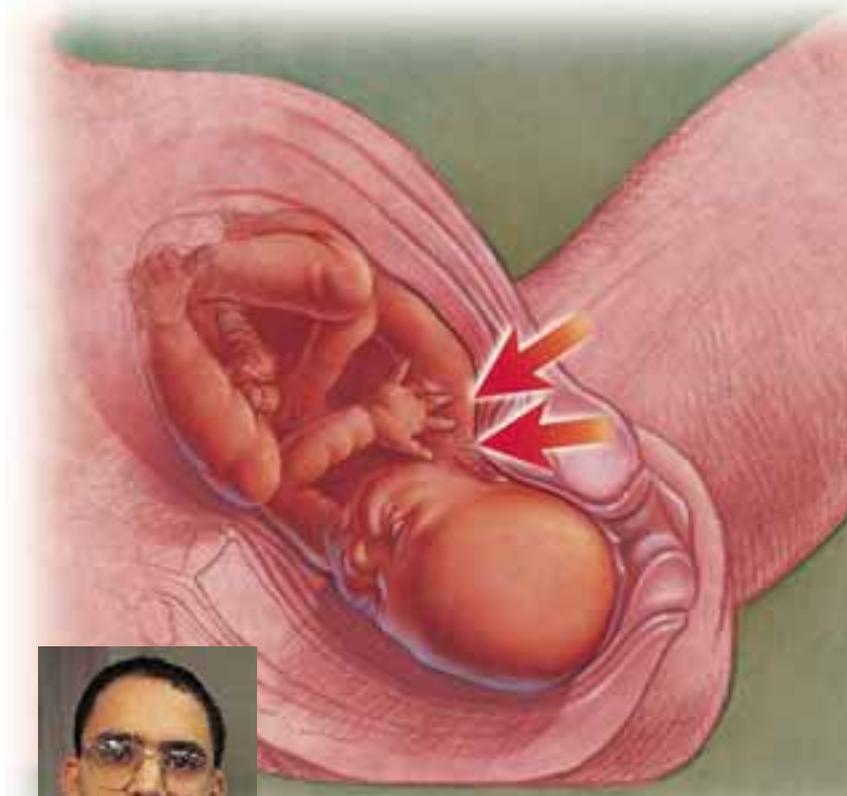
**A**lthough shoulder dystocia occurs in less than 1% of all births, it can lead to serious injury of the infant and mother. Potential fetal complications include death, permanent neurologic impairment, brachial plexus injury, and Erb's palsy, while the mother may suffer vaginal and cervical lacerations, significant blood loss, or uterine rupture.

Several techniques can be administered to safely dislodge the infant's shoulder, including the Woods-screw, Rubin, Gaskin ("all-fours"), and McRoberts maneuvers. I prefer the McRoberts maneuver because it involves only maternal manipulation while allowing the fetal shoulder to rotate into the oblique diameter.

**Success rates.** McRoberts is not only technically simple to employ, but has been found to alleviate 39% to 42% of shoulder dystocias when used alone.<sup>1</sup> The addition of suprapubic pressure and/or proctoepisiotomy increases success rates to between 54% and 58%.<sup>1,2</sup> In patients with diabetes, however, success rates are not higher.<sup>1</sup> This is most likely due to the fact that infants of mothers with diabetes tend to have higher birthweights than infants of gravidas without the disease.

**Prophylaxis.** To date, no clinical studies have evaluated birth outcomes after the prophylactic

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lactic employment of the McRoberts maneuver, even though the procedure is commonplace. Since McRoberts has many potential benefits (*Table 1*), it is reasonable to consider its prophylactic use in suspected fetal macrosomia or when concern for shoulder dystocia exists. The maneuver also may be useful in managing an entrapped fetal head during a vaginal breech delivery.<sup>3</sup>

**Mechanism of action.** Contrary to popular belief, the McRoberts maneuver does not change the actual dimensions of the mater-

## Potential mechanical benefits of the McRoberts maneuver

- Anterior fetal shoulder elevation
- Fetal spine flexion
- Pushing of posterior fetal shoulder over the sacrum
- Straightening of maternal lordosis
- Removal of sacral promontory as point of obstruction
- Removal of weight-bearing force from the sacrum
- Pelvic inlet opened to maximum
- Pelvic inlet brought perpendicular to maximum expulsive force

nal pelvis. In a recently published x-ray pelvimetry analysis, we found no significant changes in the anterior-posterior and transverse diameters of the pelvic inlet, mid-pelvis, and pelvic outlet.<sup>4</sup> Nor did the obstetric, true, and diagonal conjugates increase when McRoberts was applied. Our analysis thus confirms Gonik's hypothesis that McRoberts relieves shoulder dystocia via marked cephalad rotation of the symphysis pubis and flattening of the sacrum.<sup>5</sup>

The maneuver also may work by converting voluntary maternal expulsive effort, independent of uterine contractions, into enhanced intrauterine pressure. Buhimschi and colleagues found that McRoberts not only increased the intrauterine pressure during the second stage of labor by 97%, but also increased the amplitude of uterine contractions.<sup>6</sup> Further, they calculated that McRoberts added 31 N of pushing force when employed during delivery.

### Technical considerations.

The technique is performed by flexing the mother's thighs toward her shoulders while she is lying on her back. No specific degree of elevation or flexion of the patient's legs has been

defined for the McRoberts maneuver. Recent obstetric textbooks simply state that McRoberts is performed by "hyperflexing" or "sharply flexing" the maternal legs on the abdomen.<sup>7,8</sup>

The overwhelming majority of patients can assume the proper position for the McRoberts maneuver with little difficulty. Women may be instructed to grasp the posterior aspect of their thighs and pull themselves into position, with family members or health-care professionals providing any assistance necessary. The obstetrician also may choose to flex both of the patient's legs.

Problems may occur when moving an obese patient or a woman who has undergone a dense epidural motor blockade. Further, patients with pelvic fractures, spinal-cord injuries, severe degenerative joint disorders (osteoarthritis or rheumatoid arthritis), or neuromuscular disorders may have trouble assuming a dorsal lithotomy position, making the McRoberts maneuver difficult or impossible to perform.

**Additional maneuvers.** My colleagues and I have found that the need for additional maneuvers after McRoberts has been performed is correlated to fetal birthweights, length of the active phase of labor, and length of the second stage of labor.<sup>1</sup> In these circumstances, additional maneuvers including suprapubic pressure, fetal rotational maneuvers (Woods or Rubin), extraction of the posterior fetal arm, and proctoepisiotomy may be employed. I recommend that the

patient undergo the McRoberts maneuver while these ancillary techniques are performed. Since these techniques involve direct fetal manipulation, they should not be hindered by McRoberts.

**Neonatal injury.** The McRoberts maneuver does not remove the inherent risk of neonatal bone or nerve injury associated with shoulder dystocia. Even among

■ The McRoberts maneuver does not change the actual dimensions of the maternal pelvis. Rather, it relieves shoulder dystocia via marked cephalad rotation of the symphysis pubis and by flattening the sacrum.

■ The use of the McRoberts maneuver alone has been found to alleviate 39% to 42% of shoulder dystocias.

■ Prolonged application of the McRoberts maneuver may unduly stretch the fibrocartilaginous articular surfaces of the symphysis pubis.

### Key points

patients who undergo McRoberts only, approximately 10.2% of infants will have brachial plexus injuries.<sup>1</sup>

With increased fetal bisacromial diameters, a condition that occurs in infants of mothers with diabetes, the protective effects of McRoberts appear to be reduced while the incidence of brachial plexus palsy is increased.<sup>1</sup> Even so, objective testing indicates that the McRoberts maneuver may reduce fetal-shoulder extraction forces and brachial plexus stretching.<sup>9</sup>

**Complications.** Care should be taken to avoid prolonged or overly aggressive application of the McRoberts maneuver, as the fibrocartilaginous articular surfaces of the symphysis pubis and surrounding ligaments may be unduly stretched. In addition, when the maternal thighs are markedly flexed and abducted, pressure from the overlying inguinal ligament may lead to femoral nerve injury.

My colleagues and I have experienced 2 cases in which significant maternal morbidity was associated with the McRoberts maneuver. In one, a patient who was maintained in McRoberts throughout her 2-hour, 11-minute second stage of labor suffered a 5-cm symphyseal separation, dislocation of the sacroiliac joint, and transient lateral femoral cutaneous neuropathy. These abnormalities required closed reduction of the left hemipelvis, followed by an open reduction and internal fixation of the symphysis pubis 2 weeks after failing conservative treatment.<sup>10</sup> A previous report described similar pelvic findings following an exaggerated McRoberts maneuver for suspected fetal macrosomia.<sup>11</sup>

**The long view.** In 1991, a survey of 108 major teaching institutions in the United States found that only 64% were familiar with the McRoberts maneuver and only 40% taught the maneuver to house staff.<sup>12</sup> Yet, William A. McRoberts, Jr, MD, practiced his maneuver with great success for more than 40 years at Hermann Hospital and the University of Texas Medical School in Houston.<sup>13</sup> As we continue into the new millennium, I believe it is important to teach residents to initially employ the McRoberts maneuver whenever shoulder dystocia occurs. ■

#### REFERENCES

1. Gherman RB, Goodwin TM, Souter I, Neumann K, Ouzounian JG, Paul RH. The McRoberts maneuver for the alleviation of shoulder dystocia: how successful is it? *Am J Obstet Gynecol.* 1997;176:656-661.
2. McFarland MB, Langer O, Piper JM, Berkus MD. Perinatal outcome and the type and number of maneuvers in shoulder dystocia. *Int J Gynecol Obstet.* 1996;55:219-224.
3. Shushan A, Younis JS. McRoberts maneuver for the management of the aftercoming head in breech delivery. *Gynecol Obstet Invest.* 1992;34:188-189.
4. Gherman RB, Tramont J, Muffley P, et al. Analysis of McRoberts maneuver by x-ray pelvimetry. *Obstet Gynecol.* 2000;95:43-47.
5. Gonik B, Stringer CA, Held B. An alternate maneuver for management of shoulder dystocia. *Am J Obstet Gynecol.* 1983;145:882-884.
6. Buhimschi CS, Buhimschi IA, Malinow A, Weiner CP. Use of McRoberts position during delivery and increase in pushing efficiency. *Lancet.* 2001;358:470-471.
7. Gabbe SG, Niebyl JR, Simpson JL. *Obstetrics: Normal and Problem Pregnancies.* New York: Churchill Livingstone; 2001:473-501.
8. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC, Hauth JC, Wenstrom KD, eds. *Williams Obstetrics.* New York: McGraw-Hill; 2001:461-463.
9. Gonik B, Allen R, Sorab J. Objective evaluation of the shoulder dystocia phenomenon: effect of maternal pelvic orientation on force reduction. *Obstet Gynecol.* 1989;74:44-47.
10. Heath T, Gherman RB. Symphyseal separation, sacroiliac joint dislocation, and transient lateral femoral cutaneous neuropathy associated with McRoberts maneuver: a case report. *J Reprod Med.* 1999;44:902-904.
11. Gherman RB, Ouzounian JG, Incerpi MH, Goodwin TM. Symphyseal separation and transient femoral neuropathy associated with the McRoberts maneuver. *Am J Obstet Gynecol.* 1998;178:609-610.
12. O'Leary JA, Pollack NB. McRoberts maneuver for shoulder dystocia: a survey. *Int J Gynecol Obstet.* 1991;35:129-131.
13. O'Leary JA. McRoberts maneuver. In: O'Leary JA, ed. *Shoulder Dystocia and Birth Injury: Prevention and Treatment.* New York: McGraw-Hill; 1992:128-136.

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