

# Shoulder Dystocia: Comparison of the ACOG Practice Bulletin with Another National Guideline

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## ABSTRACT

Our objective was to compare national guidelines regarding shoulder dystocia. Along with the American College of Obstetricians and Gynecologists (ACOG) practice bulletin on shoulder dystocia, guidelines from England, Canada, Australia, and New Zealand were reviewed. The Royal College of Obstetricians and Gynaecologists (RCOG) guideline agrees with the ACOG definition of shoulder dystocia, but there are variances in the management of suspected macrosomia and resolution of impacted shoulders. How recommendations are categorized differ also. Only 53% (20 of 38) of eligible references are cited by both publications. The two national guidelines on shoulder dystocia have differences and disagreements with each other, raising concerns about how the literature is synthesized and which is more comprehensive.

**KEYWORDS:** Shoulder dystocia, ACOG, RCOG, national guidelines

Although occurring in ~2% of vaginal deliveries, and lasting less than a few minutes, clinicians involved with delivery have been preoccupied with shoulder dystocia.<sup>1</sup> A PubMed search with the terms “shoulder dystocia” provides 719 citations with 621 of them in English, and a Google search of these two words offers 146,000 citations in 0.13 seconds (October 14, 2008). Considering that impacted shoulders need to be delivered within minutes, that there is potential for neurological and orthopedic injury, and infrequently neonatal mortality,<sup>1</sup> it is understandable why it is called the nightmare and why we are engrossed with the topic.

Although there are several sources to learn from and understand the topic, national guidelines are ideal because they synthesize the literature objectively,

provide simple recommendations on how to manage the emergency optimally, and protect against litigation.<sup>2</sup> The American College of Obstetricians and Gynecologists (ACOG) publishes practice bulletins; the Royal College of Obstetricians and Gynaecologists (RCOG), green guidelines; the Society of Obstetricians and Gynecology (SOGC) of Canada, clinical practical guidelines; and the Royal Australian New Zealand College of Obstetricians and Gynaecologists (RANZCOG), clinical statements.<sup>3–6</sup> Our previous review of the four national guidelines on the topic of small for gestational age infants<sup>7</sup> was instructive because it noted that remarkable variation in guidelines. Thus, it occurred to us that comparison of guidelines on shoulder dystocia would be illustrative of practices in different countries

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and instructive on the management of an obstetrical emergency.

The purpose of this review article is to ascertain the similarities and differences, if any, in national guidelines on shoulder dystocia. The review started with accessing the ACOG, RCOG, SOGC, and RANZCOG Web sites<sup>4-7</sup> and determining if they have any publications on impacted shoulder. As of October 2008, neither SOGC nor RANZCOG had published national guidelines on this topic. Thus this review focuses on ACOG and RCOG guidelines on shoulder dystocia,<sup>1,8</sup> published in November 2002 and December 2005, respectively.

### TERMINOLOGY AND DEFINITION

Both ACOG and RCOG define shoulder dystocia using the same phrase: “requiring additional obstetric maneuvers” when “gentle downward traction” has “failed” to affect the delivery of the shoulders. These guidelines acknowledge that although it is possible for the posterior shoulders to be impacted on the sacral promontory, more commonly it is the impaction of the anterior shoulder on the maternal symphysis that leads to shoulder dystocia (Table 1). Although ACOG notes there is a subjective nature in the diagnosis of this condition, RCOG does not mention this.

In 1995,<sup>9</sup> or 7 years before the practice bulletin and 10 years before the RCOG guidelines publication,

an objective definition of shoulder dystocia was proposed. According to this criterion, a prolongation of head-to-body delivery time of >60 seconds was shoulder dystocia. A subsequent publication in 1998<sup>10</sup> confirmed that among 722 vaginal births, the need for ancillary maneuvers and neonatal injuries were confined to those that met the objective criteria of shoulder dystocia. Despite the seemingly simple and objective definition, neither ACOG nor RCOG (Table 1) acknowledges it as one of the definitions of impacted shoulders.<sup>1,8</sup>

The incidence of this obstetric emergency, according to RCOG, is 0.6% among unselected population in the United Kingdom and in North America.<sup>8</sup> The practice bulletin notes that shoulder dystocia may complicate up to 1.4% of vaginal births.<sup>1</sup>

### RISK FACTORS AND PREDICTION

The RCOG guideline, in tabular form, categorizes the risk factors into prelabor and intrapartum, whereas the practice bulletin describes them. Both agree on the association of shoulder dystocia with macrosomia, diabetes, obesity (defined by RCOG as body mass index of >30 kg/m<sup>2</sup>), prior history of shoulder dystocia, labor induction, or operative vaginal delivery (Table 1). Additionally, ACOG, but not RCOG, considers multiparity, postterm pregnancy, and epidural anesthesia as increasing the likelihood of impacted shoulder.<sup>1,8</sup>

There is an inconsistency regarding labor abnormalities as a risk factor. RCOG considers prolonged first stage and prolonged second stage as intrapartum risk factors for shoulder dystocia, although they neither define them nor provide references.<sup>8</sup> The practice bulletin, in contrast, concludes that the data are inadequate to suggest that abnormalities of the labor curve can be used as a predictor.<sup>1</sup> This uncertainty is based on three publications, two of which, using case-control design, reached the opposite conclusion of whether characteristics of the first stage of labor differentiates who has shoulder dystocia versus who do not.<sup>11,12</sup> The third study cited by ACOG noted that the second stage of labor did not differ among parturients with complications.<sup>13</sup>

Although there is a slight disagreement on the risk factors, both national guidelines (Table 1) use the same phrase to describe shoulder dystocia: an “unpredictable and unpreventable” event.<sup>1,8</sup> They acknowledge that the multitude of risk factors, alone or in combination, cannot predict which pregnancy will have this complication. Although ACOG does not provide a specific likelihood of identifying a newborn with morbidity,<sup>1</sup> the RCOG guideline states that only 16% of newborns with an injury can be identified with risk factors.<sup>8</sup>

**Table 1 Similarities in the Two National Guidelines on Shoulder Dystocia**

	ACOG (2002) and RCOG (2005)
Shoulder dystocia defined as	Requiring additional obstetric maneuvers. Gentle downward traction failed. Objective definition of shoulder dystocia—head-to-body delivery time >60 s is not mentioned by both guidelines.
Characterized as	Unpredictable and unpreventable
Impaction of	Anterior shoulder more likely than posterior shoulder
Risk factors	Macrosomia, diabetes, obesity, prior history of dystocia, labor induction, operative vaginal delivery
McRoberts maneuver	First step to resolve the impaction
Zavanelli maneuver	When all other maneuvers fail
Maternal complications	Postpartum hemorrhage 11 % Fourth-degree laceration in 3.8 %
BPI	4% of all BPI occur during cesarean delivery 10% of BPIs are permanent

ACOG, American College of Obstetricians and Gynecologists; RCOG, Royal College of Obstetricians and Gynecologists; BPI, brachial plexus injury.

## PREVENTION

Because the obstetric emergency cannot be predicted, it is reasonable to ascertain if it can be prevented with induction or a planned cesarean delivery. Among nondiabetic women, the practice bulletin cites a randomized clinical trial<sup>14</sup> and a retrospective study<sup>15</sup> to conclude induction is unwarranted for suspected macrosomia; RCOG guidelines reference two review articles<sup>16,17</sup> to reach the same conclusion. The reasons for not recommending induction are that it does not decrease the rate of shoulder dystocia or of cesarean delivery,<sup>1</sup> and it does not improve maternal or fetal outcome.<sup>8</sup>

Among nondiabetic women, both guidelines caution against elective cesarean delivery for suspected macrosomia but disagree on the threshold of estimated fetal weight. ACOG notes that cesarean delivery may be considered if the estimated fetal weight is 5000 g and the patient does not have diabetes.<sup>1</sup> RCOG specifically points out that this recommendation by ACOG is not supported by data, and that larger infants are more likely to have permanent brachial plexus than transient. Thus, for RCOG, estimated fetal weight >4.5 kg is an indication for elective cesarean delivery.<sup>8</sup> Both guidelines agree that among diabetic women, an estimated weight of  $\geq 4500$  g is sufficient for cesarean delivery.<sup>1,8</sup>

Among patients with risk factors for shoulder dystocia, RCOG notes that the prophylactic McRoberts maneuver is not recommended for it does not prevent impaction of the shoulder.<sup>8</sup> Additionally, the RCOG guideline suggests that among parturients at risk, an experienced obstetrician should be present during the second stage of pregnancy.<sup>8</sup> ACOG does not encourage the presence of an experienced clinician for those at risk.<sup>1</sup>

## DIAGNOSIS

Although acknowledging the subjective component in diagnosis, the practice bulletin notes that the retraction of the fetal head against the perineum, or turtle sign, assists in the diagnosis of shoulder dystocia.<sup>1</sup> RCOG is more specific in the diagnosis, and they mention that routine traction in an axial direction may be utilized to ascertain if the shoulder is impacted.<sup>8</sup> Because timely management of the emergency requires prompt recognition, RCOG suggests that each clinician should routinely observe for four things: difficulty with delivery of the face and chin, head either tightly applied to the vulva or retracting, failure of restitution of the fetal head, and failure of the shoulders to descend.<sup>8</sup> RCOG cautions against lateral and downward traction of the head to diagnose the impaction because cadaver studies suggest that the combination increases the likelihood of nerve avulsion.

## MANAGEMENT

ACOG considers the McRoberts maneuver as the initial method to resolve shoulder dystocia, which may be used in conjunction with suprapubic pressure. Rotational maneuvers or delivery of the posterior shoulder are used when the initial attempts are unsuccessful. Routine episiotomy is unnecessary but should be considered if additional room is needed in the posterior vagina to rotate the fetus or extract an arm. When these maneuvers are unsuccessful, the options are cephalic replacement (Zavanelli maneuver) or intentional fracture of the clavicle. Because fundal pressure may worsen the impaction, it should be avoided.<sup>1</sup>

RCOG starts the discussion of the management by reminding clinicians that almost half of the deaths related to shoulder dystocia occurred when the fetus could not be delivered within 5 minutes after the head emerged.<sup>8</sup> The initial step with the recognition of impaction is to call for help, consisting of further midwifery assistance, another obstetrician, pediatric resuscitation, and an anesthetist. The RCOG guideline not only recommends McRoberts as the first maneuver but clearly states that it is the most effective intervention for it is successful in 90% of cases and has a low complication rate. Consistent with ACOG, RCOG recommends that suprapubic pressure can be used separately or in conjunction with McRoberts. The RCOG guideline does provide specific suggestions about the second maneuver: Apply the pressure in downward and lateral direction, it should last for 30 seconds, and there is no advantage to applying the pressure in a continuous or in a rocking movement.

If these two simple measures fail, then the options are the all-four position, which is *not* mentioned by ACOG in the practice bulletin, or internal manipulation.<sup>1,8</sup> If, for example, the patient is not obese, does not have an epidural, and the midwife is alone, then the all-four position may be the preferred option for the success has been reported to be as high as 83%. Alternatively, if the patient is obese or has an epidural or if an experienced clinician is present, internal rotation may be appropriate.<sup>8</sup> RCOG notes that because there is no advantage between extraction of the posterior arm versus internal rotation, the clinician's training and experience should determine what to do.

When these fail, RCOG, like ACOG, suggests the Zavanelli maneuver (Table 1) or a cleidotomy (bending of the clavicles with a finger or surgical division). Although not mentioned by ACOG, RCOG mentions symphysiotomy (dividing the symphyseal ligament) as one of the third-line maneuvers.<sup>1,8</sup> The RCOG guideline does note that these maneuvers are needed infrequently have a potential for maternal and neonatal morbidity. Lastly, RCOG notes that with shoulder dystocia, the clinicians should be prepared for postpartum hemorrhage and repair of third- and fourth-degree perineal repair.<sup>8</sup>

Unlike the ACOG guideline, RCOG explicitly states that all birth attendants should have training in the management of shoulder dystocia. The training may be annual and consist of simulation training or with a mannequin that provides force feedback. They provide the HELPER (call for Help, evaluate for Episiotomy, Legs [McRoberts], suprapubic Pressure, Remove posterior arm, Roll the patient) mnemonic for training and suggest that the maneuvers should be demonstrated directly because they are complex and difficult to understand.<sup>8</sup>

Although not mentioned by the practice bulletin,<sup>1</sup> the RCOG guideline stresses that documentation is essential. RCOG states that it is important to record the time of the delivery of the head and of the body, the direction the head is facing, the timing and sequence of maneuvers, the staff attending and when they arrived, Apgar scores, and umbilical cord acid-base determination. Interestingly, in the main body of the guideline, RCOG emphasizes that with Erb's palsy it is important to determine whether the affected shoulder was anterior or posterior at the time of delivery.<sup>8</sup>

#### MATERNAL AND NEONATAL MORBIDITY

Citing the same reference,<sup>18</sup> both ACOG and RCOG say that postpartum hemorrhage occurs in 11% of deliveries complicated by shoulder dystocia and fourth-degree perineal laceration in 3.8% (Table 1). The practice bulletin, however, notes that these maternal complications are more likely if rotational maneuvers are used, but the RCOG guideline concludes that the rate of these morbidities is unchanged by the maneuvers required to effect delivery.<sup>1,8</sup> Additionally, both ACOG and RCOG mention that heroic steps, like cephalic replacement and symphysiotomy, may be associated with maternal complications, but neither guideline provides us with the likelihood of the morbidity.

Brachial plexus injury (BPI) is one of the important neonatal injuries associated with shoulder dystocia. Based on 12 references,<sup>19-30</sup> ACOG estimates that this morbidity occurs in 4 to 40% of impacted shoulders, and based on three citations,<sup>18,21,31</sup> RCOG notes the injury occurs in 4 to 16% of cases. Only the publication by Acker et al<sup>21</sup> is cited by both national guidelines. Interestingly, neither of the guidelines defines a permanent versus a transient BPI. Moreover, using different references (<sup>20,26,28</sup> by ACOG and<sup>32</sup> by RCOG), both guidelines conclude that the injury is permanent in 10% of the cases. The incidence of BPI is 1 in 2300 live births in the United Kingdom.<sup>8</sup> ACOG does not provide similar data for the United States.<sup>1</sup>

Although it would be instructive to know what, if any, risk factors are linked to permanent versus temporary brachial injury, neither of the guidelines provides much information. RCOG does note that the injury is

independent of the operator experience,<sup>8</sup> but ACOG does not comment on this.<sup>1</sup> Both guidelines state that BPI can occur without shoulder dystocia, and although ACOG considers this to occur in 34 to 47% of brachial injury, RCOG, without providing a precise number, concludes that this occurs in a substantial minority of cases. ACOG, citing four references<sup>23,33-35</sup> and RCOG, relying on just one publication,<sup>35</sup> reach an identical number: 4% of all BPIs occur during cesarean delivery (Table 1).

The practice bulletin does note that fracture of the clavicle and humerus is possible with shoulder dystocia, as is hypoxic-ischemic encephalopathy and death. The RCOG guideline does not mention fracture as a potential complication of impacted shoulder dystocia, and it does not acknowledge the possibility of neonatal death. Neither of the guidelines<sup>1,8</sup> provides the incidence of these injuries.

#### RECOMMENDATIONS

Both national guidelines extensively review the literature on the topic, evaluate the studies according to the method outlined by the U.S. Preventive Service Task Force<sup>1</sup> or U.S. Agency for Healthcare Research and Quality,<sup>8</sup> and classify their recommendations as level A, B, or C. Both agree that level C suggestions are based primarily on expert committee reports or on the consensus of expert opinion. The two, however, differ on what constitutes B or A recommendations. For ACOG, level B recommendations have limited or inconsistent scientific evidence; for RCOG, it means an availability of well-controlled studies but the absence of randomized clinical trials (RCTs). For level A recommendations, ACOG needs good and consistent scientific evidence, which does not need to be an RCT. RCOG, in contrast, requires at least one RCT to grade a recommendation as level A.

On this topic, ACOG has 5 recommendations, with no level A, 2 level B and 3 level C; RCOG has 9 recommendations, with 2 level A, 3 level B, and 4 level C. Level A recommendations by RCOG states that induction, for nondiabetic and diabetic women, is unwarranted because it does not improve peripartum outcomes. The level A suggestion is based on two Cochrane reviews,<sup>17,36</sup> one review article,<sup>16</sup> and a randomized trial.<sup>37</sup> Surprisingly, although citing three randomized trials<sup>14,37</sup> and one retrospective review,<sup>15</sup> ACOG's level B recommendation is that induction for suspected macrosomia should not be done, although it does specify whether it is applicable to diabetic women (Table 2).

Both national guidelines<sup>1,8</sup> conclude that shoulder dystocia can neither be predicted nor prevented in the majority of the cases, and both organizations consider this to be a level B recommendation. Whereas RCOG<sup>8</sup> considers episiotomy as unnecessary

**Table 2 Recommendations by Two National Guidelines on Shoulder Dystocia**

	ACOG (2002)	RCOG (2005)
Level A	None	<ol style="list-style-type: none"> <li>1. There is no evidence to support induction of labor in women without diabetes at term where the fetus is thought to be macrosomic.</li> <li>2. Induction of labor in women with diabetes mellitus does not reduce the maternal or neonatal morbidity of shoulder dystocia.</li> </ol>
Level B	<ol style="list-style-type: none"> <li>1. Shoulder dystocia cannot be predicted or prevented because accurate methods for identifying which fetuses will experience this complication do not exist.</li> <li>2. Elective induction of labor or elective cesarean delivery for all women suspected of carrying a fetus with macrosomia is not appropriate.</li> </ol>	<ol style="list-style-type: none"> <li>3. Risk assessments for the prediction of shoulder dystocia are insufficiently predictive to allow prevention of the large majority of cases.</li> <li>4. Episiotomy is not necessary for all cases.</li> <li>5. The McRoberts maneuver is the single most effective intervention and should be performed first.</li> </ol>
Level C	<ol style="list-style-type: none"> <li>3. In patients with a history of shoulder dystocia, estimated fetal weight, gestational age, maternal glucose intolerance, and the severity of the prior neonatal injury should be evaluated and the risks and benefits of cesarean delivery discussed with the patient.</li> <li>4. Planned cesarean delivery to prevent shoulder dystocia may be considered for suspected fetal macrosomia with estimated fetal weights exceeding 5,000 g in women without diabetes and 4,500 g in women with diabetes.</li> <li>5. There is no evidence that any one maneuver is superior to another in releasing an impacted shoulder dystocia or reducing the chance of injury. However, performance of the McRoberts' maneuver is a reasonable initial approach.</li> </ol>	<ol style="list-style-type: none"> <li>6. Elective cesarean section is not recommended to reduce the potential morbidity for pregnancies complicated by suspected fetal macrosomia without maternal diabetes mellitus.</li> <li>7. Elective cesarean section should be considered to reduce the potential morbidity for pregnancies complicated by suspected fetal macrosomia associated with maternal diabetes mellitus.</li> <li>8. Fundal pressure should not be employed.</li> <li>9. Suprapubic pressure is useful.</li> </ol>

ACOG, American College of Obstetricians and Gynecologists; RCOG, Royal College of Obstetricians and Gynecologists.

for the management of impacted shoulder dystocia as a level B recommendation, ACOG does not mention this as a recommendation. In the text of the practice bulletin, however, episiotomy is regarded as controversial and possibly helpful if direct fetal manipulation is necessary. For RCOG,<sup>8</sup> the McRoberts maneuver is considered the most effective intervention, and it is classified as a level B recommendation. ACOG, as a level C recommendation, considers the McRoberts maneuver as a "reasonable initial approach" but acknowledges there is no evidence it is superior to another.<sup>1</sup> Thus the importance of the McRoberts and classification of the evidence is different for the two organizations.

The two national guidelines differ regarding the recommendation of elective cesarean delivery among nondiabetic women to minimize the risk of shoulder dystocia. Based on a cost-effective analysis by Rouse et al,<sup>23</sup> ACOG suggests,<sup>1</sup> as a level C recommendation,

that if the estimated weight is  $\geq 5000$  g, then elective cesarean is appropriate for those without diabetes. The RCOG guideline<sup>8</sup> specifically acknowledges the threshold of 5000 g in the practice bulletin and concludes there are no data to directly support ACOG recommendation. Thus, as a level C recommendation, RCOG suggests that there is no estimated fetal weight for which elective cesarean should be undertaken to avoid shoulder dystocia.<sup>8</sup> For diabetic patients, both national guidelines, as a level C recommendation, agree that if the estimated weight is  $\geq 4500$  g, a cesarean is appropriate.<sup>1,8</sup>

Appropriate factors to consider in the management of patients with a history of shoulder dystocia is a level C recommendation in the practice bulletin<sup>1</sup> but is not even mentioned in the RCOG guideline.<sup>8</sup> Two level C suggestions by RCOG (to avoid fundal pressure and to use suprapubic pressure) are not categorized as a recommendation by ACOG, although the text of practice bulletin is in total agreement.

## REFERENCES AND AUTHORS

ACOG uses the MEDLINE database, its own internal resources, and the Cochrane Library to conduct the literature search; RCOG searches the last two sources but also uses EMBASE, and the Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects (DARE), and the trial registry. Both guidelines do not provide the reasons for including or excluding references or for how consensus was reached among author(s) and the national committee. The duration of the search was ~15 years (January 1985 to November 2000) for ACOG and ~24 years (January 1980 to August 2004) for RCOG. The time interval from ending the literature search and the publication of the guideline was 24 months (November 2000 to November 2002, respectively) for ACOG and 16 months (August 2004 to December 2005) for the RCOG guideline.

A comparison of the references cited for the two guidelines is instructive. The practice bulletin<sup>1</sup> has 51 references, with the oldest citation 24 years before publication of the guideline; for the 63 RCOG citations, the corresponding value is 105 years. The median year of publication for references was 1995 for ACOG and 1998 for RCOG. The median time interval from publications of these references versus the guideline is 8 years for ACOG and 7 years for RCOG. Because the guideline from the United Kingdom was published after ACOG's, we determined how many of the references cited by RCOG were published before November 2000, the month ACOG closed their literature search. There is an error in the practice bulletin: Although the literature search ended in November 2000, one of its reference<sup>38</sup> was published 8 months later, in June 2001. Notwithstanding the error, of the 63 references by RCOG on shoulder dystocia, 60%<sup>38</sup> were published before November 2000, and of these 38 citations, only 20 (53%) were referenced by both national guidelines. Lastly,

it is noteworthy that 40% (25 of 63) of RCOG guideline's references were published during the 46 months when ACOG and RCOG closed their searches.

## COMMENTS

Our previous comparison of ACOG and RCOG guidelines on fetal growth restriction<sup>7</sup> revealed some similarities and exposed several dissimilarities in how the literature is synthesized on a topic and how different the recommendations can be (Tables 1 and 3). For example, we noted that although both agree on the definition, there were noticeable variances in the diagnosis and management of abnormal growth. RCOG has 350% more recommendations than ACOG (18 versus 4, respectively), and the articles referenced varied, with only 13 similar articles cited by both committees. Such variations on suboptimal growth prompted us to review another topic. We selected the subject of shoulder dystocia because of its unpredictability and the urgency to resolve the impacted shoulder, its potential for morbidity, and its litigious nature.

Our review of four national guidelines on the shoulder dystocia is notable for four findings. First, Canada, Australia, and New Zealand do not have a national guideline on this topic, and the United Kingdom and the United States do. The potential reasons for the absence of guidelines from countries include infrequent occurrence of shoulder dystocia, a lower likelihood of concomitant morbidity or litigation; other medical problems with a greater need for formulating guidelines, or they are forthcoming in the future. Second, the ACOG and RCOG agree<sup>1,8</sup> on the definition of shoulder dystocia and that the same two words describe the nightmare: unpredictable and unpreventable (Table 1). Because it is an emergency situation, with limited time to resolve the impaction, it would seem that

**Table 3 Eleven Differences in Two National Guidelines on Shoulder Dystocia**

	ACOG (2002)	RCOG (2005)
Shoulder dystocia is complicated by BPI	4–40%	4–16%
BPI occurs without shoulder dystocia	34–47%	Substantial minority
Maternal propulsive force as a cause of BPI	Not mentioned	Significant evidence
McRoberts maneuver	Not superior to other maneuvers	Single most effective intervention
All-four position to resolve shoulder dystocia	Not mentioned	An option if McRoberts and suprapubic are ineffective
Elective cesarean delivery among nondiabetic women	If estimated fetal weight is $\geq 5000$ g	Not recommended at any weight
Rehearsal/skill training	Not mentioned	A requirement
Documentation to avoid successful litigation	Not mentioned	Recommended
Management of patients with prior shoulder dystocia	Mentioned	Not mentioned
Figures of maneuvers	No	Yes
Algorithm for the management of shoulder	No	Yes

BPI, brachial plexus injury; ACOG, American College of Obstetricians and Gynecologists; RCOG, Royal College of Obstetricians and Gynecologists.

both guidelines should have a similar algorithm to resolve it. Although the two guidelines recommend similar maneuvers—McRoberts, suprapubic pressure, avoidance of fundal pressure, and direct manipulation of the fetus—there are differences (Table 3). For ACOG,<sup>1</sup> no one maneuver is superior to others; for RCOG,<sup>8</sup> McRoberts is the single most effective intervention. RCOG recommends the all-fours-position as a reasonable a choice as internal manipulation; the practice bulletin does not mention the option. It may be that in the two countries the likelihood of having an epidural or being managed by a midwife is different, which may explain why the all-fours position is emphasized by RCOG. But to be comprehensive, ACOG should acknowledge this as a possible maneuver to relieve an impacted shoulder. Table 3 summarizes the 10 additional differences in the two guidelines. The points of disagreement could be viewed as areas in which controversy exists, even among experts, and should be the focus of future studies. Pending further investigations, a reasonable clinician could choose either approach and be within the standard of care.<sup>39</sup>

The third finding of this comparative study is the recommendations in each guideline. A level A suggestion is the highest grade by both organizations, and on this topic there are none by ACOG and two by RCOG. Among diabetic and nondiabetic women, the RCOG guideline categorizes induction as being unwarranted for suspected macrosomia as level A, and ACOG considers it level B. Additionally, the recommendations disagreed about the estimated weight at which cesarean should be done (Table 3). With a weight of 5000 g, an elective cesarean is reasonable for nondiabetic women for ACOG, but for RCOG there is no threshold. Thus, at times, two national societies assess the literature differently and reach dissimilar conclusions.

Our fourth finding focuses on the references cited by the national guidelines. When the time period of the literature search overlapped, just half (53%) of the references by the RCOG guideline and practice bulletin were similar. During the 46 months when ACOG and RCOG stopped the search, there were 25 additional references, about one every other month, which the RCOG guideline considered important enough to reference. Thus ACOG should consider revising its guideline. Admittedly, ACOG did reaffirm the 2002 practice bulletin in 2008, but nowhere does it provide how the reaffirmation took place, what articles were reviewed in the process, and why the differences cited by RCOG were not addressed. A search, for example, using the terms “shoulder dystocia, simulation” provided 17 articles in English that were published between 2003 and 2008. Yet neither this topic nor these publications are addressed in the reaffirmation. A possible reason this topic remains of immense clinical and legal importance relates to the lack of clear consensus and specificity in

both sets of guidelines. If ACOG and RCOG were to collaborate and formulate highly specific guidelines (even if based only on expert consensus opinion), it could minimize morbidity and litigation. Indeed, the largest private health-care delivery system in the United States has been able to reduce litigation, in part, by implementing uniform process and procedures.<sup>40</sup>

Limitations of the study need to be acknowledged. We reviewed the two guidelines without obtaining information from the authors or the organizations. It would be useful to know, for example, how each organization decided which publication on the topic to include or exclude, what constitutes a recommendation, whether RCOG was aware of the ACOG guideline on the topic, along with the differences between them. Thus far we compared guidelines on two topics; we cannot generalize the differences we noted on other subject matter. Lastly, we acknowledge that although ACOG and RCOG have published how the national guidelines should be developed, we did not determine their compliance.

In conclusion, even though two national guidelines describe shoulder dystocia as unpredictable and unpreventable, and the management is similar in several respects, there are notable differences and some contradictions. Synthesis of the literature and formulation of recommendations should not be divergent.

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