

Brachial plexus injury without shoulder distocia

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The definition of obstetric brachial plexus palsy is the flaccid paralysis of the arm produced by the elongation of the brachial plexus of the newborn during the delivery [1]. The more frequent arm affected is the right arm [1]. Obstetric brachial plexus palsy is rare, the incidence is estimate to be between 0.1 and 6.3 cases per 1,000 live newborn infants [1,2,3]. The main risk factors to develop a prachial plexus palsy are:

- Instrumental delivery (forceps mainly). In many studies forceps is associated with newborns affected by brachial plexus palsy, in 38 to 69.5% of the cases [1,3].
- Newborns weighing more than 4000 g (macrosomia), is associated in 37.5 to 56.5% of newborns with brachial plexus palsy in some large studies. [1,3]. Anyway there is a percentage a newborns weighing less than 4000g that develop shoulder dystocia and some macrosomic newborns without any plexus injury.
- Excessive maternal weigh gain during the pregnancy (>13.5kg) and obesity (>85kg) is also related with an increment of brachial plexus palsy of the newborns of this mothers [4].
- Shoulder dystocia, the difficulty in extraction of the shoulders during childbirht, is also associated with brachial plexus injury (53.3 to 60%) [5,6]
- Gestational diabetes or diabetes previous to pregnancy are also related because the increased risk of macrosomia [7].
- Multiparity is associated also with shoulder dystocia [8]

One interesting point is the high percentage of brachial plexus injuries that take place in the absense of shoulder dystocia, observed by some authors [3,9]. In a review [3] of brachial plexus injuries occurring over a period of 11 years at the Hospital Universitari Sant Joan de Déu in Barcelona (Spain), which included 23 cases of Erb's palsy out of a total of 27,287 births, we found that shoulder dystocia was described in only in 3 (13%) of these cases [3]. The incidence of brachial plexus injury observed in the study, slightly less than one case (0.84) per 1000 births, is similar to that found by other autors [1,2]. One explanation is the underreporting of shoulder dystocia by the professional attending the labour.

Also cases of brachial plexus injury in cesarean deliveries have been described [10].

Other newborn lesions associated to brachial plexus palsy are, clavicle fracture (13 to 19%) [1,3], homolateral facial palsy (4,3%), diaphragm plasy [1], Claude-Bernard-Horner Syndrome [1], perinatal asphyxia, hypoxicischemic encephalopathy and perinatal mortality [7].

In a high percentage of cases, the injury resolves completely without sequelae. In Sant Joan de Deu study, in 14 cases (60.8%), there was complete recovery from the injury, in 3 cases recovery was

partial, in 2 cases the injury persisted beyond one year [3]. This data are confirmed by other studies with 53% of total recovery and 47% of partial neurologic disfunction after 6 months [1].

We conclude that brachial plexus injury is infrequent childbirth complication, difficult to predict or prevent [6]. 46% of the newborn infants with brachial plexus injury weighed less than 4000 g [3]. This fact in combination with cases of brachial plexus injury observed in cesarean deliveries, raises questions about the mechanism by which the injury is produced, and suggests that cesarean delivery will not lower the risk of injury [10]. It is important to keep in mind that most newborns with brachial plexus injury experience a complete recovery. It is important also to report all cases with shoulder distocia in order to improve the training of midwives and Obstetric doctors in maneuvers to resolve this situations improving obstetrics results. The implementation of practical training with simulation for all care providers in the delivery room is associated with a significant reduction in neonatal injury [7].

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