

## Cradle and Developmental Dysplasia of the Hip The tradition and the adverse effect

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### ABSTRACT

**Background and Objectives:** Landek (Cradle) is a special equipment use for swaddling and calming newborn babies The effect of Landek on the developmental dysplasia of hip has been studied in this research in order to raise the social and cultural awareness about this issue.

**Methods:** 168 cases with developmental dysplasia of hip have been prospectively collected over three years in Duhok-Iraqi Kurdistan. The cases were divided in to two groups. The first group was advised not to use Landek and the other group were continued to use Landek. Both groups are followed up for six months. The grading of DDH was performed depending on the ultrasonic examination (Graf technique). The cases in both groups were diagnosed to have grade IIb.

**Results:** The first group has shown 90% improvement from grade IIb to grade I, 8% to grade IIa and 2% were not improved. The control group has shown deterioration to grade III in 50% of them and to grade IIc in 25%. The rest did not show changes in grade. For the acetabulum to grow properly, it requires a normally positioned femoral head. The popular use of Landek and other swaddling methods among eastern societies were considered to be post-natal risks for DDH because they put hip joint in both adduction and extension position. These two positions were found to be unfavorable for the normal development of hip joint.

**Conclusions:** Landek found to have adverse effect and facilitates the developmental dysplasia of the hip in patents with poorly developed hip joint. Therefore, a broad campaign is necessary against the use of Landek for newborn babies.

**Key words:** DDH,lanek,ultrasound,cradles.

### INTRODUCTION:

Landek is a special swaddling equipment which uses for calming the baby since her/his birth. After putting the baby in the Landek, he will be wrapped strongly by a garment or by a bandage like material. The resultant position of the baby is adduction and extension of both hips (Figure 1). It has been previously proved that hip adduction position during early periods of life affect directly on the development of hip joint <sup>1,2</sup>. The question is raised by the researcher about using of landek in the development of developmental dysphasia of the hip.



**Figure 1:** The traditional way of wrapping the baby in a garment before putting him/her in the cradle.

The hip joint is socket and ball joint and there is an appositional growth from the edges of acetabulum which is responsible for the depth of it <sup>3,4</sup>. Therefore,

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**Table 1:** Synopsis of Sonographic hip types:

| Type according to Graf | Maturity  |
|------------------------|---|
| Type 1                 | Mature hip  |
| Type 2a (+)            | Physiological immature-appropriate for age  |
| Type 2a (-)            | Physiological immature-maturational deficit   |
| Type 2b                | Delay of ossification   |
| Type 2c                | Critical range ( $\gamma$ c stable/ $\gamma$ c unstable)  |
| Type 3a                | Eccentric hip without structural alteration   |
| Type 3b                | Eccentric hip with structural alteration and perichondrium pressed upward   |
| Type 4                 | Eccentric hip with perichondrium pressed downward and the cartilaginous acetabular roof no longer covers the femoral head |

acetabulum to be developed normally requires a correctly positioned femoral head within hip joint. The post-natal growth of the hip joint can be affected by the way the babies are held<sup>5</sup>. The high incidence of developmental dysplasia of the hip in red-Indians found to be due to abnormal post-natal handling of their babies (extention and adduction). During early periods of life, acetabulum and femoral head are greatly cartiligenous. Therefore, Ultrasound has found to be more valuable than x-ray in neonate<sup>6,7,8</sup>. For the above reason, ultrasound screening has been used in this study for diagnosis of developmental dysplasia of the hip and subsequent follow up. The hip can be classified according to ultrasonography and it has been shown in (Table 1). The incidence of neonatal hip instability at birth was found to be 5- 10 per 1000 live birth<sup>9,10</sup>. However, this incidence decreases to 1- 2 per 1000 live births at the age of 3 weeks. Therefore, the role of post-natal factors apart from inherent neonatal hip instability should be studied in the development of hip dysplasia<sup>11,12</sup>. The aim of this study is to explore the effect of Landek on the infant's hip in order to provide public awareness about the risk of using landek for newborn babies in our society.

#### PATIENTS AND METHODS:

The cases are collected prospectively in Duhok Governorate for three years (2005- 2008). Ultrasonography has been used for the initial diagnosis and follows up of patients with developmental dysplasia of the hip for 6 months. They were examined by Ultrasonography by a team of orthopedic surgeon and radiologist who have been trained in a specialized DDH center in Austria. The cases that have been diagnosed during the first two weeks of life were classified into two groups. The first group was advised not to use Landek and swaddling and they encouraged to use double napkins (Intervention group). There were 68 females and 32 males. 12 of them were having unilateral developmental dysplasia of hip and the other 18 were having bilateral developmental dysplasia of hip. All the hips were in grade IIb according to Ultrasonography examination. The second group was refused to not use Landek as they were prevailed by traditional beliefs (Traditional group). This group composed of 68 cases (48 females and 20 males) and in 48 cases of them was unilateral and in 20 cases of them was

the hip was also found to be in grade IIb according to Ultrasound examination.

**RESULT:**

The first group has shown 90% improvement from grade IIb to grade I, 8% to grade IIa and 2% were not improved. The control group has shown deterioration to grade III in 50% of them and to grade IIc in 25%, Figure two and three. The rest did not show changes in grade, Table 2. Five cases were lost to follow up in intervention group and six cases from traditional group.



**Figure 2:** Grade IIb DDH before starting the intervention.



**Figure 1:** Improvement to grade I can be obviously seen by Ultrasonography at the end of the study.

**Table 2:** Grades of DDH before and after the intervention :

|                    | Grade of DDH at the beginning of the study %(No.) | Grade of DDH at the 6 month of follow up %(No). |            |              |              |              | Loss to follow up) No) |
|--------------------|---|---|------------|--------------|--------------|--------------|------------------------|
|                    |   | I   | IIa        | IIb          | IIc          | III          |                        |
| Traditional group  | IIb 100%(68)                                      | I (0)   | IIa (0)    | IIb 24% (16) | IIc 46% (31) | III 22% (15) | 8% (6)                 |
| Intervention group | IIb 100%(100)                                     | I 85% (85)                                      | IIa 8% (8) | IIb 2% (2)   | IIc (0)      | III (0)      | 5% (5)                 |

**DISCUSSION :**

In the literature, it has been suggested that swaddling and holding babies with their hips adducted and extended can aggravate development of hip joint dysplasia in newborn babies with pre-existing hip instability(13). A national campaign against swaddling for newborn babies has shown a significant decline in the incidence of

developmental dysplasia of hip in Japan. Landek is a form of swaddling used to hold the baby with their legs in extreme adduction and some degree of extension. Therefore, a question has been raised by the researchers to explore the role of Landek in the developmental dysplasia of the hip in Kurdish society. The present study explored that Landek has significant effect on the developmental dysplasia of

the hip. Grades of DDH in babies who have been continued on using Landek increased significantly at the end of 6 months of follow up comparing to those who were not using Landek. The finding can be considered as one of the important post-natal risk factors for the relatively high incidence of DDH among Kurdish population. As the consequences of DDH might cost the life quality of the patients and their productivity in society, all efforts should be done to decrease the incidence of this disabling condition. Fortunately, some of the postnatal factors, including the use of Landek, are reversible. A broad campaign against the traditional use of Landek is very important at all levels of society in hope for a new generation with less hip problems as a result of DDH.

#### CONCLUSION:

Landek aggravates the developmental dysplasia of the hip. A national campaign against practice of Landek for new born babies is recommended in order to decrease the incidence of this disabling condition.

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