

## Effectiveness of adenotonsillectomy in improving of nocturnal enuresis in children with adenotonsillar hypertrophy

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### ABSTRACT

**Background:** Nocturnal enuresis (NE) is an old & common childhood condition. It has been found that, there is a relationship between adenotonsillar hypertrophy in children & nocturnal enuresis. **Aim:** This study was conducted to see the effects of adenotonsillectomy on nocturnal enuresis in children with adenotonsillar hypertrophy.

**Methods:** This study was conducted in Diwaniyah teaching hospital, Diwaniyah city, Iraq, from May 2012 to August 2014. The total number of children admitted for adenotonsillectomy or tonsillectomy alone were 287 children, 76 out of the total number were included in the study. The children were followed- up by the same questionnaire for four months postoperatively, including, age, the number of night bed wettings, type of enuresis and the results of urine examination.

**Results:** Of total 287 children who were submitted for surgery, 76 children were eligible for the study, 48(63.16%) of the total number included in the study were males and 28 (36.84%) were females. The mean age was 7.2 y.

Adenotonsillectomy was performed in 64 children, and tonsillectomy in 12 children. A complete improvement of nocturnal enuresis (NE) & daytime incontinence was achieved in 32 (42.11%) children. A mild to moderate improvement was observed in 38 (50%), while no improvement seen in the remaining 6 (7.89%) children postoperatively.

**Conclusion:** Children with nocturnal enuresis should be evaluated by ENT surgeon to rule out any adenotonsillar hypertrophy for possible adenotonsillectomy effect. However, a wide base studies are needed to clarify these results.

## Introduction

Nocturnal enuresis (NE) is the most common pediatric urologic complaint encountered by primary care physicians. Despite its prevalence, nocturnal enuresis remains incompletely understood, which can frustrate patients, family members, & physicians [1]. The prevalence of nocturnal enuresis has been difficult to estimate because of variations in its definition and in social standards. It is now generally accepted that 15 to 20 percent of children will have some degree of nighttime wetting at five years of age, with a spontaneous resolution rate of approximately 15 percent per year [2]. Bedwetting, like sleep walking & night terrors, is another parasomnia occurring during slow-wave sleep in the young. Before age 5 or 6, nocturnal enuresis should probably be considered a normal feature of development [3]. Children aged 6 years & older who were reported to have 1 or more wet nights per month over the past 12 months were defined as having nocturnal enuresis (NE)[4].

The adenoids and tonsils in the upper airway are very small at birth and then they grow during the first 4 years of the life. They tend to shrink toward the adolescence period. During this period, children with adenoid and tonsillar hypertrophy could show some

pathological symptoms and signs. It is stated that recurrent acute and chronic inflammation cause adenoid hypertrophy in some children [5]. Adenotonsillar hypertrophy is a common cause of OSAS in the pediatric population [6, 13].

Several retrospective studies have addressed the beneficial effects of adenotonsillectomy in improving nocturnal incontinence in children with simultaneous adenotonsillar hypertrophy & preoperative enuresis [14]. NE occurs more commonly in boys, & in children with family history of enuresis, lower socioeconomic status & black ethnicity. The prevalence of NE decreases but the severity increases with age [15].

The causes of NE are not well understood completely. Several theories have been proposed, including the role of genetic factors, alteration in vasopressin secretion, sleep factors, and abnormal bladder dynamic. Other mechanisms may include psychological influences, organic disease, & maturational delay [16]. NE may be caused by heavy snoring or sleep apneas due to adenotonsillar hypertrophy. There are two, non-exclusive, possible explanations for this, first, the constant arousal stimuli from the obstructed airways causes paradoxically high arousal thresholds & second, the negative intrathoracic pressure causes polyuria via

increased secretion of the atrial natriuretic peptide [17]. This study was done to investigate the results of adenotonsillectomy on children with NE & had adenotonsillar hypertrophy.

## Methods

This study was conducted in Diwaniyah teaching hospital, Diwaniyah city, Iraq from May 2012 to August 2014. Nocturnal enuretic children aged from 6 to 13 y old with adenotonsillar hypertrophy & features suggestive of obstructive sleep apnea syndrome (such as snoring, mouth breathing, drooling & apnea) were enrolled. Most of the information was taken from the parents. The questionnaire included the name, sex & age of the child, also included any daytime urinary symptoms (such as urgency, burning of micturition, or any other abnormal urological symptoms etc.), number of nighttime bed wettings per week. The children were followed by the same questionnaire for four months postoperatively using telephone or visiting ENT outpatient of the hospital or my private clinic directly. Children with nocturnal enuresis and had a history of urological or neurourological problems or had a primary enuresis were excluded from the study. The total number of children admitted for adenotonsillectomy or

tonsillectomy alone were 287. Seventy six children out of the total number were included in the study while others were excluded for many causes either of their age or they had primary nocturnal enuresis or other causes. The children characteristics admitted for tonsillectomy or adenotonsillectomy were:

**Table1:**

Characteristics of the studied patients

Gender	With enuresis Number (%)	Without enuresis Number (%)	Total number Number (%)
Male	48 (63.16%)	115 (54.5%)	163 (56.79%)
Female	28 (36.84%)	96 (45.5%)	124 (43.21)
Total	76 (26.48%)	211(73.51%)	287 (100%)

## Results

Of total 287 children who were submitted for surgery, 76 children were eligible for the study, 48 (63.16%) of the total number included in the study were males and 28 (36.84%) were females. The mean age was 7.2 years. Adenotonsillectomy was performed in 64 children, and tonsillectomy in 12 children (Table 1).

A complete improvement of nocturnal enuresis (NE) & daytime incontinence was achieved in 32 (42.11%) children. A mild to moderate improvement was observed in 38 (50%), while no improvement seen in the remaining 6 (7.89%) children postoperatively.

## Discussion

Nocturnal enuresis (NE) is an old & common childhood condition. In the last two decades, many studies concentrated on the relation between the adenotonsillar hypertrophy & nocturnal enuresis. Adenotonsillar hypertrophy is one of the most common leading causes of upper airway obstruction which may result in nocturnal enuresis in children [18]. On the contrary to many studies, our study included only children who were 6 years of age or older as the nocturnal enuresis before this age is a physiological phenomenon rather than pathological. The results of this study showed a complete nocturnal enuresis resolution of more than one third of cases of children with adenotonsillar hypertrophy following adenotonsillectomy or tonsillectomy and these results were near to the results conducted by Larisa Kovacevic et al who assessed 101 children with nocturnal enuresis and reported a significant improvement in 49%, with complete resolution in 39% [15].

Another study by Basha S et al who investigated 107 children with nocturnal enuresis and reported a 61.4% of the children free from enuresis, 22.8% had a decrease in enuresis and 15.8% had no change in enuresis [13]. There is one study conducted by Kalorin CM. et al who assessed 326 toilet trained children of 3 to 15 y old & they found no association between adenotonsillar hypertrophy and urinary incontinence before or after adenotonsillectomy [19].

There were some limitations to our work. Many families did not help us postoperatively because of difficult contact or absence of the parents or relevant person, and the selection of only children older than 5 years of age led to reduce the number of children with nocturnal enuresis included in the study. No or a relative improvement mostly seen in obese and children with allergic rhinitis or asthmatic.

In conclusion, tonsillectomy alone or adenotonsillectomy can help in the resolution of nocturnal enuresis. Children with nocturnal enuresis should be evaluated by ENT surgeon to rule out any adenotonsillar hypertrophy for possible adenotonsillectomy effect. However, a wide base studies are needed to clarify these results.

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