

# The Rate and Pattern of Epithelial Migration on The Atelectatic Pars Tensa Tympanic Membrane

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## Introduction

Epithelial migration is one of the most important physiological function of TM in order to remove the debris of keratin and foreign bodies from TM and EAC. It has been known for more than 100 years and its contribution to physiological requirements of the ear canal is generally accepted. The existence of an epidermal migration pattern on human drum had been suggested as early as 1877 by Burnett and confirmed by Burk on 1880 and Blake on 1882. Stinson 1936 defined 5 laws of epithelial escalation. Magnoni 1938, disagreed with stinson concluded the growth is radial from the umbo. Litton 1963 & Alberti 1964 were the first estimate the rate of migration, 0.05-0.07mm/day. Both of them postulated that there was a differential in the rate of epithelial cell production. The rate of migration reduced steadily with the distance from the umbo. Further studies by Boedts and W.kuijpers 1978, Gerard.M.O'Donoghue 1983, Michaels and S.Saucek 1989 confirmed the existence of such migration and its pathway. However, all these studies so far focused on normal tympanic membrane, EAC and perforated TM. So far there is no studies are available for epithelial migration on atelectatic TM  
Atelectatic pars tensa is divided into 4 Grade: Grade I to Grade IV.

## Objective

The study aims to determine whether the atelectatic pars tensa tympanic membrane secondary to any pathology will still behave in a similar way compare to normal non-pathology ear drum, by calculating and compare the epithelial migration rate and pattern.

## Study Design

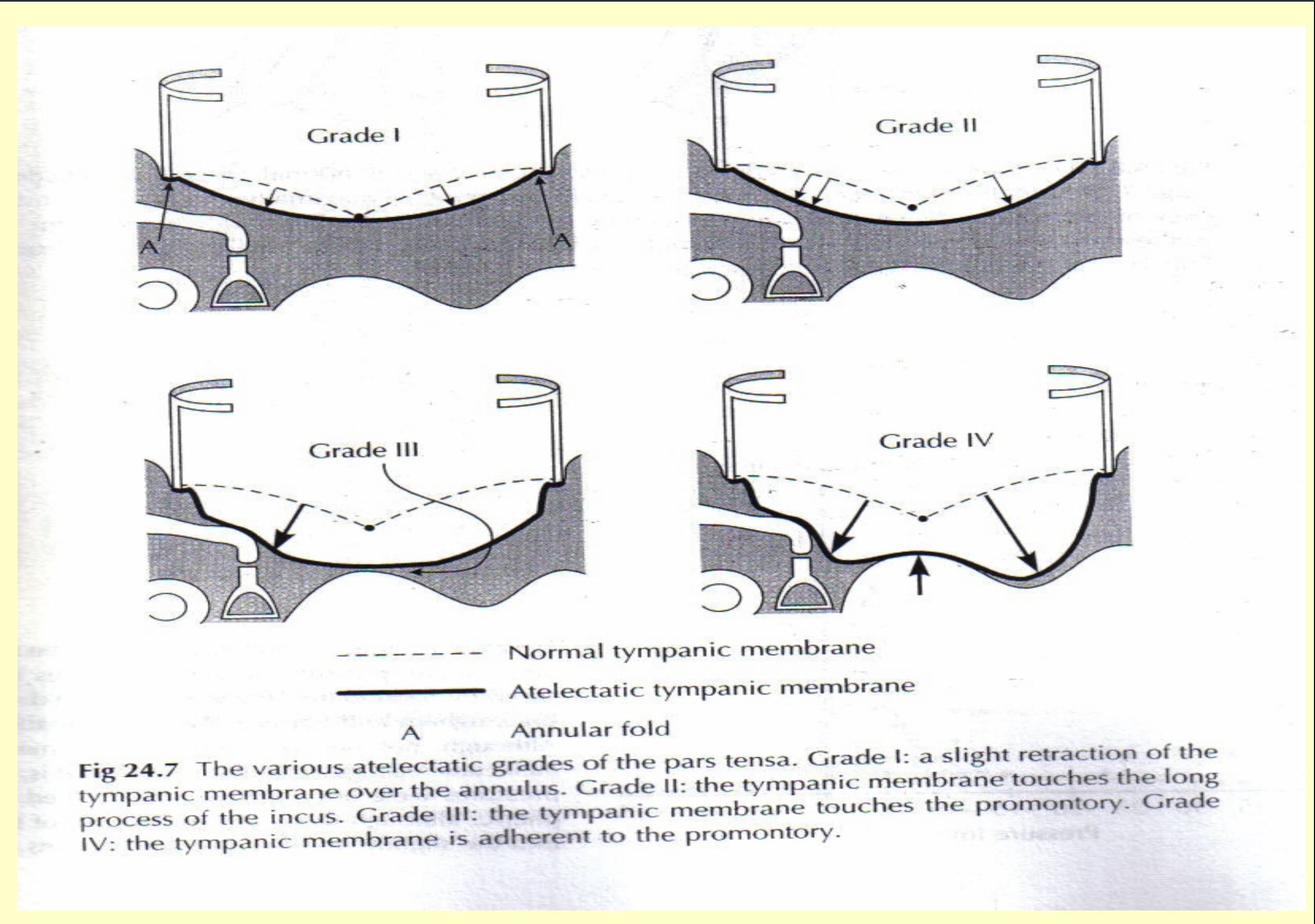
Prospective, non-randomised, descriptive study. Each subject who has had atelectatic pars tensa TM secondary to any pathology will be included and compare with the normal TM in term of rate and pattern of migration.

## Materials and Methods

A total of 15 subjects with 30 ears have been selected from Otorhinolaryngology outpatient clinic, UMMC from April 2006 to November 2006. The selected ears will be examined under operating microscope. Methylene blue ink dot will be applied to the epithelium of atelectatic pars tensa TM at the central of the retraction and same place as study TM on the normal TM, then weekly follow up was performed till the migratory pattern and the rate of epithelial migration was noted and stopped when the methylene blue ink dot migrated to annulus of TM.

## Results

Epithelial migration does occur in atelectatic pars tensa tympanic membrane from the central of retraction towards the ear canal wall in a lateral radiating manner. 12 out of 15 subjects (80%) showed similar pattern in both control and study ear of each subjects. 53% of subjects showed epithelial migration at antero-superior direction of TM. 86.6% of subjects were studied for 8 weeks throughout this study. No migration noted at study TM for the first week. A mean rate of 62.5micrometer/day with range of 52.2-71.4micrometer/day was noted in epithelial migration of study TM. The mean epithelial migratory rate for control normal TM was 65.1micrometer/day. The rate of migration increased while approaching the annulus of TM for both control and study TM



## Conclusions

This preliminary study concludes that there is not difference in epithelial migration rate and pattern between atelectatic pars tensa TM with normal TM. This study still continues to obtain bigger sample and more convincing results statistically.

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