INTRODUCTION: The primary goal of this study was to compare the chest wall thicknesses (CWT) at the 2nd intercostal space (ICS) at the mid-clavicular line (MCL) and 5th ICS at the mid-axillary line (MAL) in a population of patients with a CT confirmed pneumothorax (PTX). This result will help physicians to determine the optimum needle thoracostomy (NT) puncture site in patients with a PTX.

MATERIALS AND METHODS: All trauma patients who presented consecutively to A&E over a 12-month period were included. Among all the trauma patients with a chest CT (4204 patients), 160 were included in the final analysis. CWTs were measured at both sides and were compared in all subgroup of patients.

RESULTS: The average CWT for men on the 2nd ICS-MCL was 38mm and for women was 52mm; on the other hand, on the 5th ICS-MAL was 33mm for men and 38mm for women. On the 2nd ICS-MCL 17% of men and 48% of women; on the 5th ICS-MAL 13% of men and 33% of women would be inaccessible with a routine 5-cm catheter. Patients with trauma, subcutaneous emphysema and multiple rib fractures would have thicker CWT on the 2nd ICS-MCL. Patients with trauma, lung contusion, sternum fracture, subcutaneous emphysema and multiple rib fractures would have thicker CWT on the 5th ICS-MAL.

CONCLUSIONS: This study confirms that a 5.0-cm catheter would be unlikely to access the pleural space in at least 1/3 of female and 1/10 of male Turkish trauma patients, regardless of the puncture site. If NT is needed, the 5th ICS-MAL is a better option for a puncture site with thinner CWT.