

World Congress on  
**BREAST CANCER, GYNECOLOGY AND WOMEN HEALTH**  
&  
Annual Conference on  
**ORTHOPEDICS AND RHEUMATOLOGY**

September 06 - 07, 2018 | Bangkok, Thailand

Arch Gen Intern Med 2018, Volume 2 | DOI: 10.4066/2591-7951-C3-009

## **GENDER AND AGING PROCESS IMPACT ON FEMORAL INTRAMEDULLARY NAIL LOOSENING**

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**Aim:** To enhance the press-fit stability and to prevent nail loosening and inter-fragmentary shear motion in femoral intramedullary nail fixation, the nail-cortex contact length ratio (NCCLR) should be kept large enough. This retrospective study was designed to assess the NCCLR changes related to gender and aging process.

**Materials & Methods:** Femur anteroposterior (AP) radiograms of femoral shaft fracture of 204 patients older than 20 years, operated in our hospital were included in this study. All femurs were reamed with 13-mm, 14-mm, and 15-mm diameter reamers. Patients were divided into two major groups (male and female groups). Each group was subdivided into four subgroups, 20-39 years, 40-59 years, 60-69 years, and above 70 years. The NCCLR of the femur diaphysis were measured in all groups and changes were compared between the groups.

**Results:** In the female group, the mean NCCLR values in the 20-39, 40-59, 60-69 and above 70 years were  $13.8 \pm 4$  cm,  $11.6 \pm 4.3$  cm,  $9.4 \pm 5.3$  cm and  $8.8 \pm 3$  cm respectively. Whereas in the male group, mean values were,  $11.1 \pm 3.8$  cm,  $10.6 \pm 3$  cm,  $9.1 \pm 4.3$  cm and  $5.7 \pm 1.2$  cm respectively. A significant 48.6% decrease of NCCLR length between 20-39-year and 40-59-year old female groups was noticed ( $Z = -2.423$ ;  $P = 0.015$ ). However, in the male group, the significant NCCLR (86%) was noticed between the 40-59 years age group and above 70 years age group ( $Z = -4.279$ ;  $P = 0.001$ ).

**Conclusion:** As NCCLR decreases after the age of 40 years in women and after the age of 70 years in men groups, to enhance nail stability and to provide better NCCLR thicker intramedullary nails should be used in these age groups.