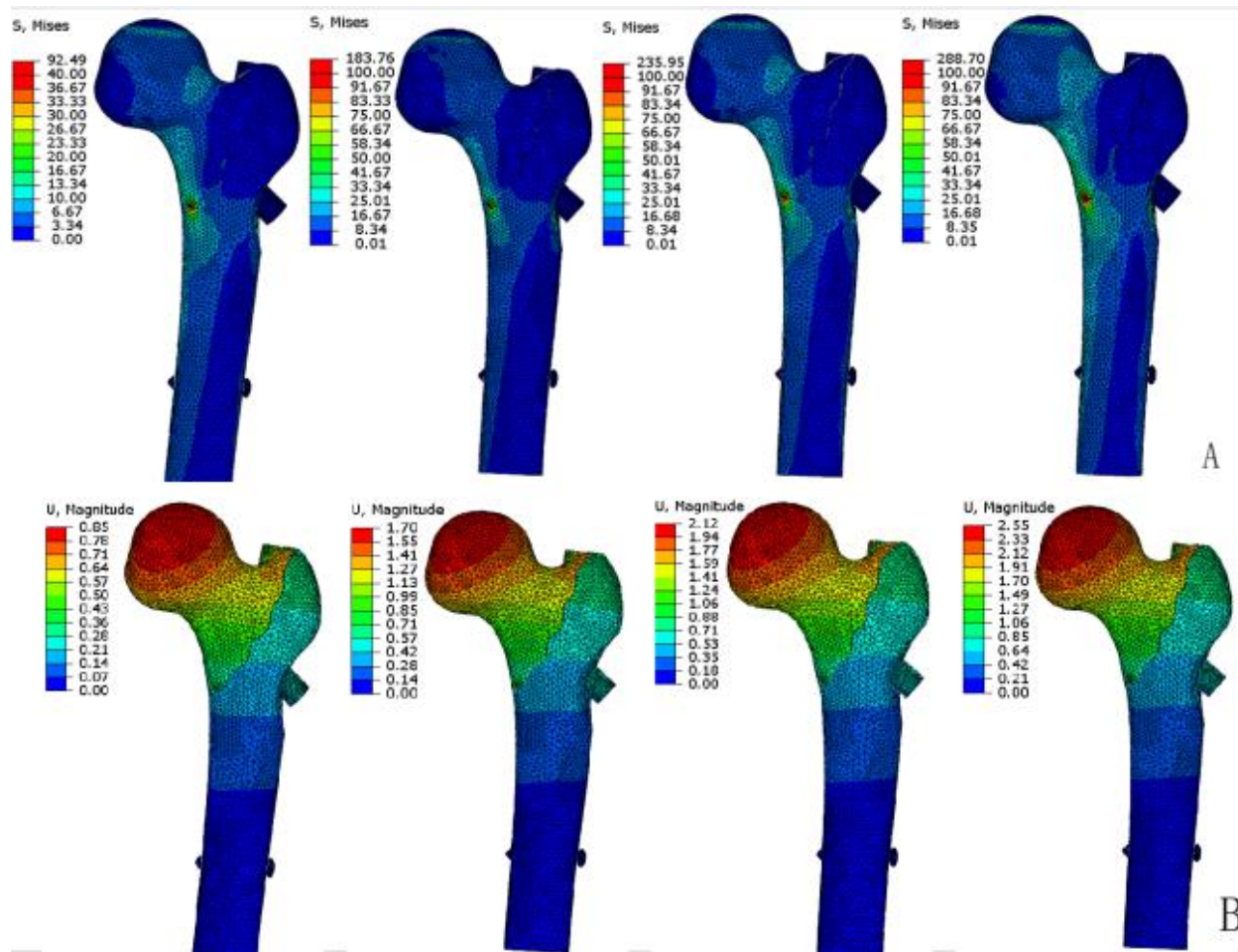
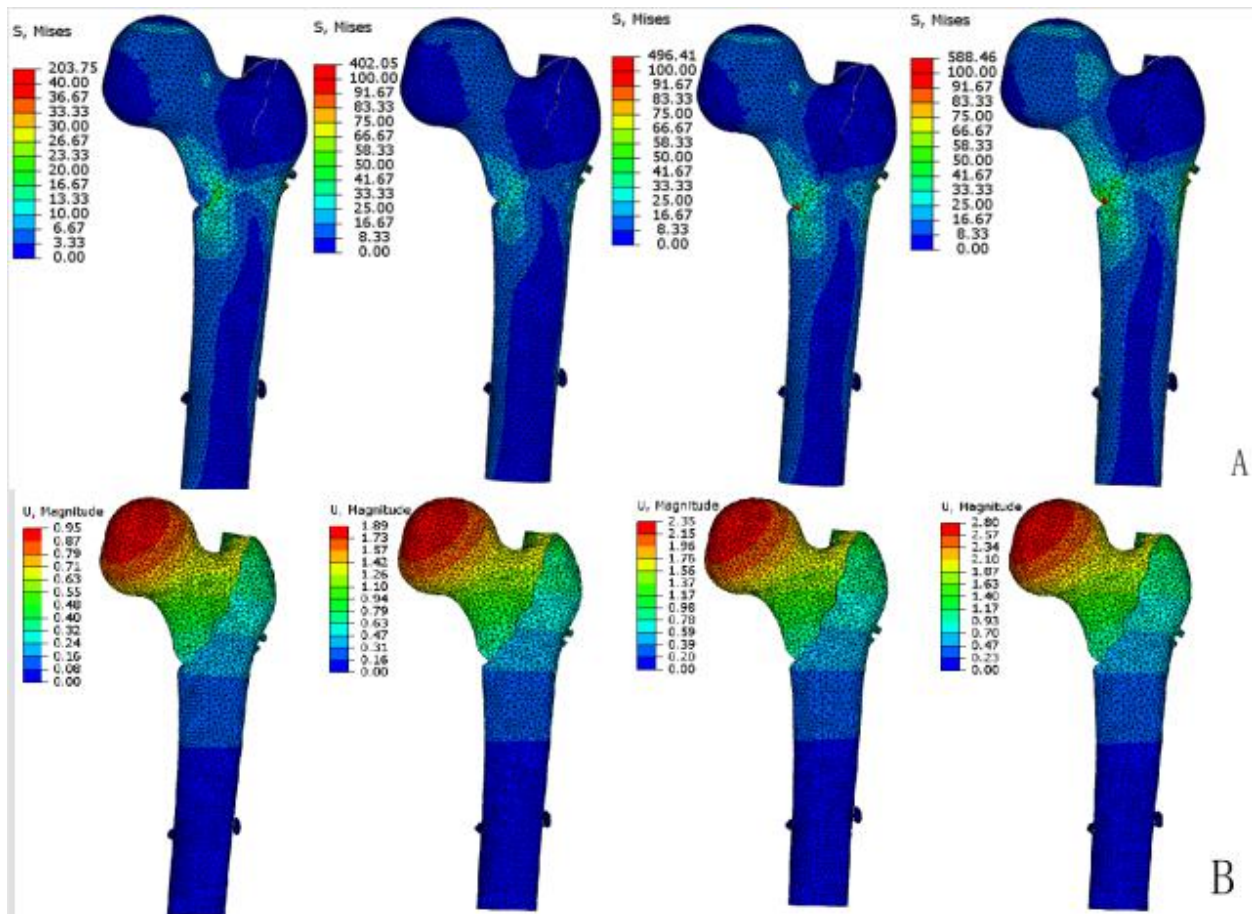


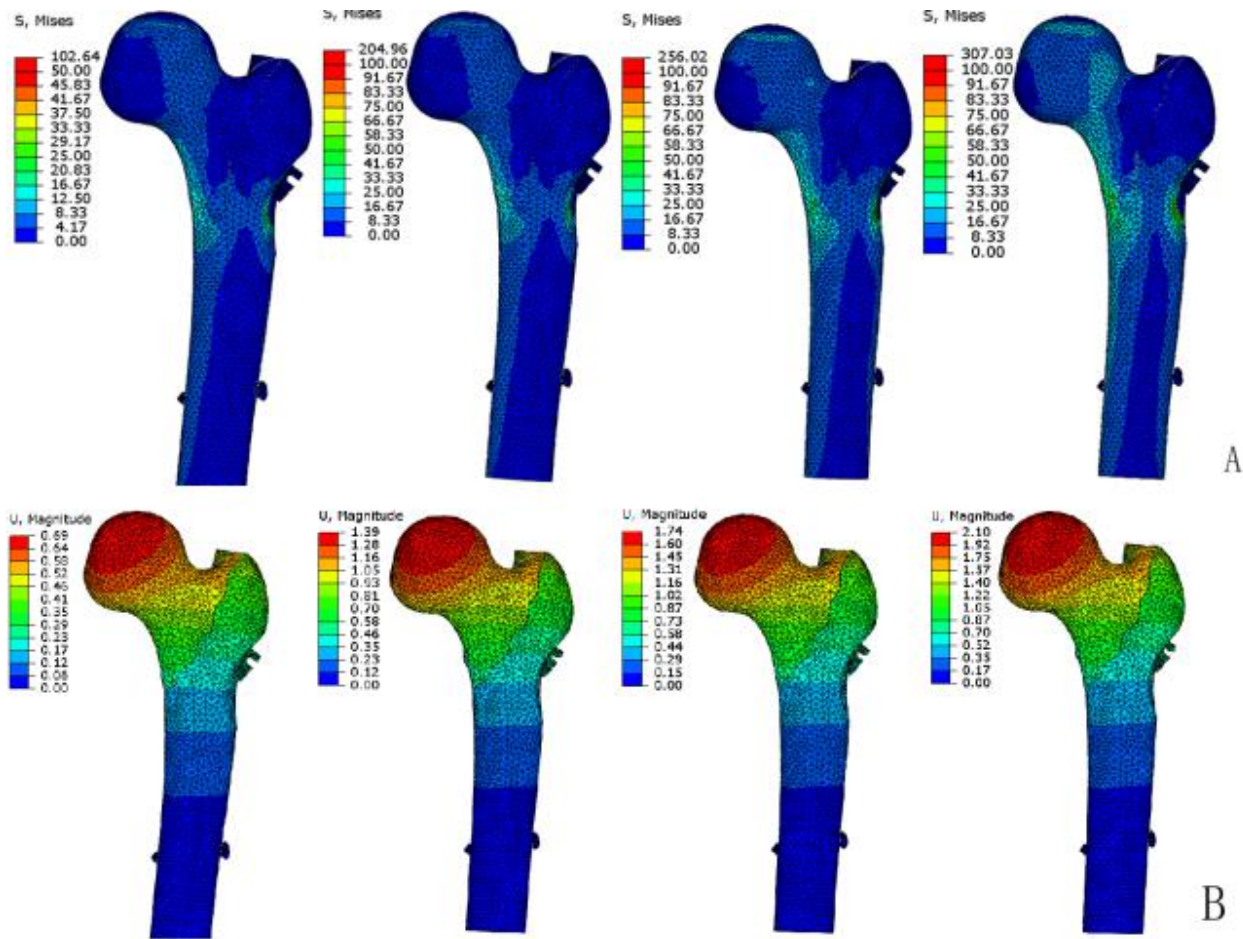
**Supplementary Figure 1 Medial defect fixed with proximal femoral anti-rotation intramedullary nail stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when medial defect fixed with proximal femoral anti-rotation intramedullary nail (PFNA); B: Displacement distribution when medial defect fixed with PFNA.**



**Supplementary Figure 2 Lateral defect fixed with proximal femoral anti-rotation intramedullary nail stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when lateral defect fixed with proximal femoral anti-rotation intramedullary nail (PFNA); B: Displacement distribution when lateral defect fixed with PFNA**

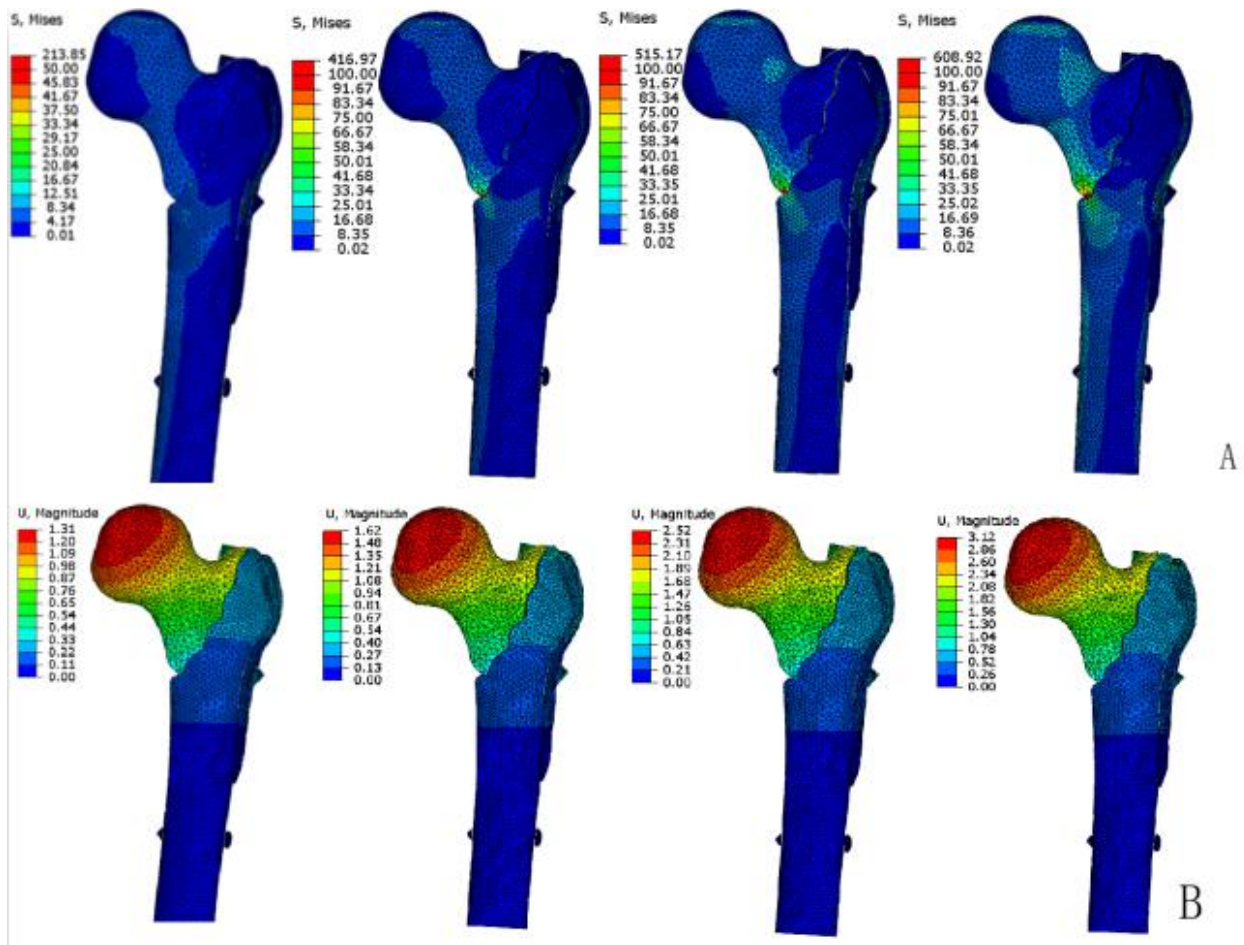


**Supplementary Figure 3 Medial defect fixed with InterTAN stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when medial defect fixed with InterTAN (ITN); B: Displacement distribution when medial defect fixed with ITN.**

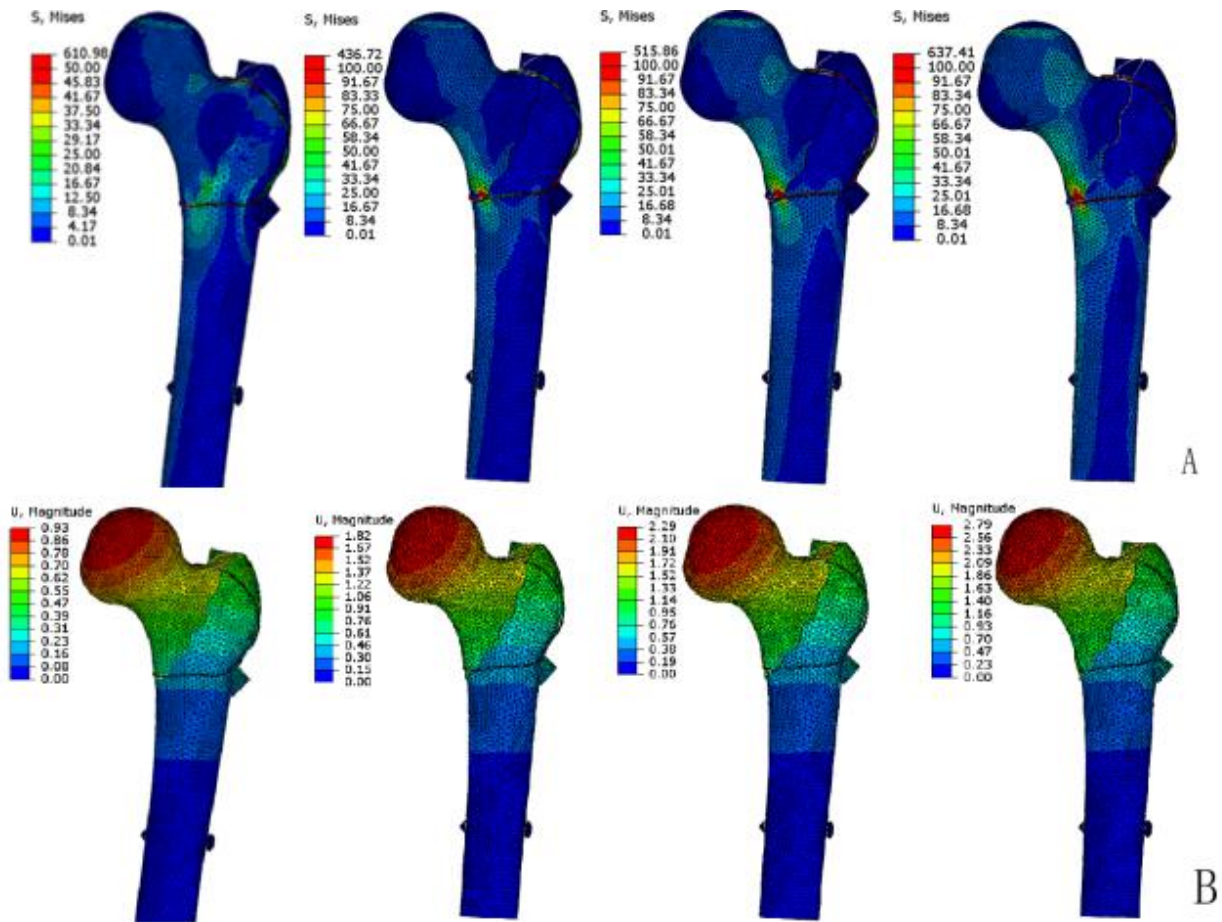


**Supplementary Figure 4 Lateral defect fixed with InterTAN stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when lateral defect fixed with InterTAN (ITN); B: Displacement distribution when lateral defect fixed with ITN.**

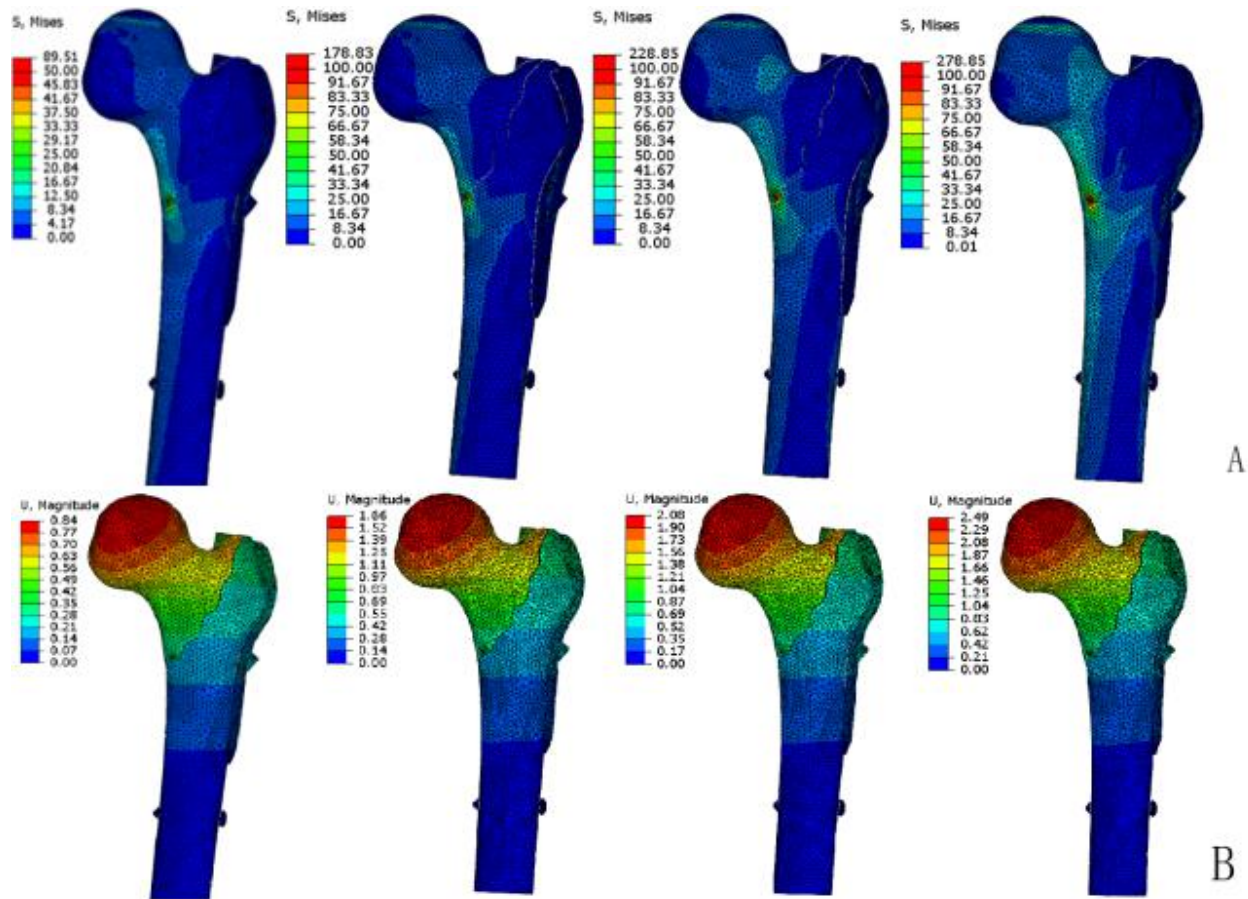




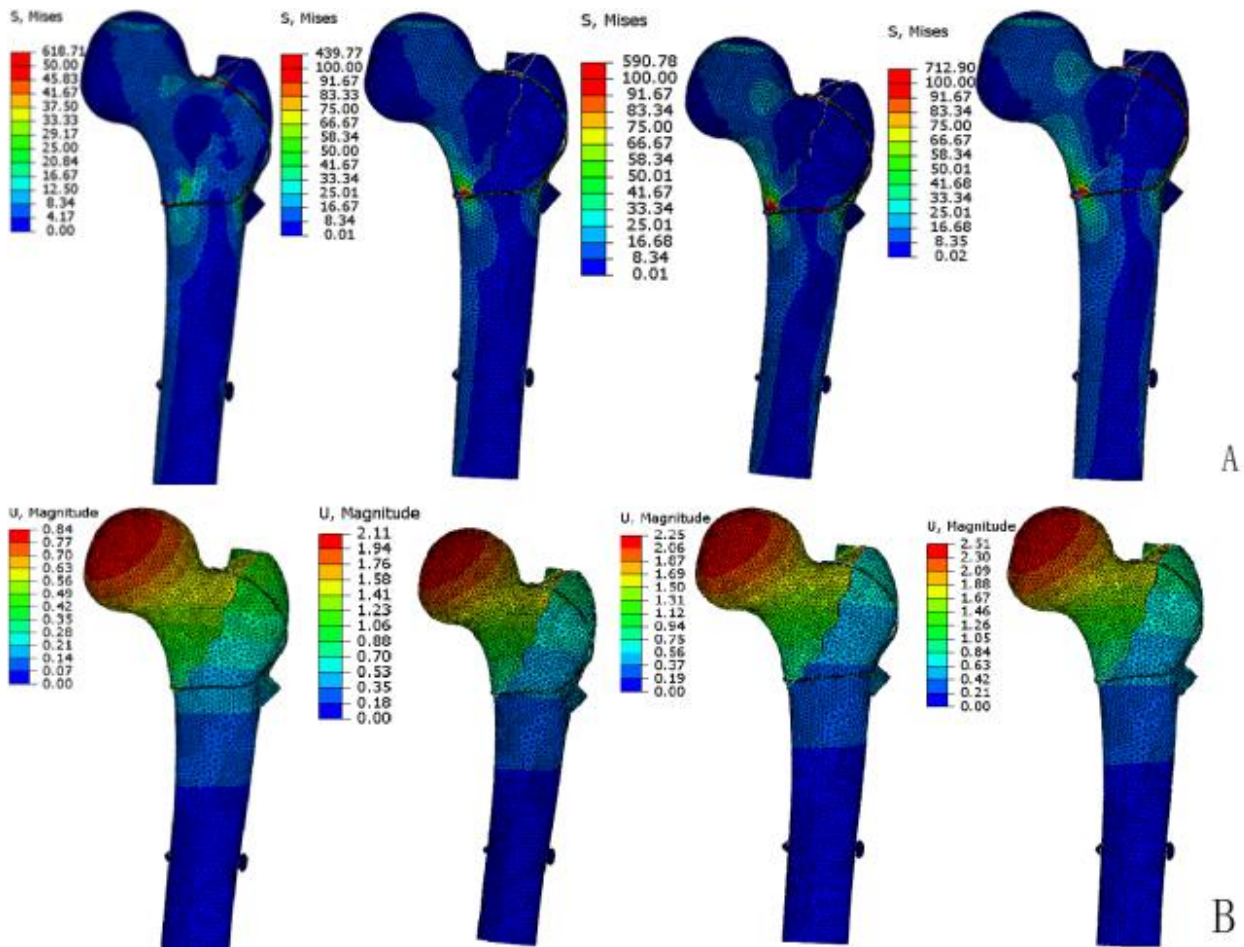
**Supplementary Figure 5 Lateral and medial defect fixed with proximal femoral anti-rotation intramedullary nail and lateral wall protection plate stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when lateral and medial defect fixed with proximal femoral anti-rotation intramedullary nail (PFNA) and lateral wall protection plate; B: Displacement distribution when lateral and medial defect fixed with PFNA and lateral wall protection plate.**



**Supplementary Figure 6 Lateral and medial defect fixed with proximal femoral anti-rotation intramedullary nail and steel wire stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when lateral and medial fixed with proximal femoral anti-rotation intramedullary nail (PFNA) and steel wire; B: Displacement distribution when lateral and medial fixed with PFNA and steel wire.**

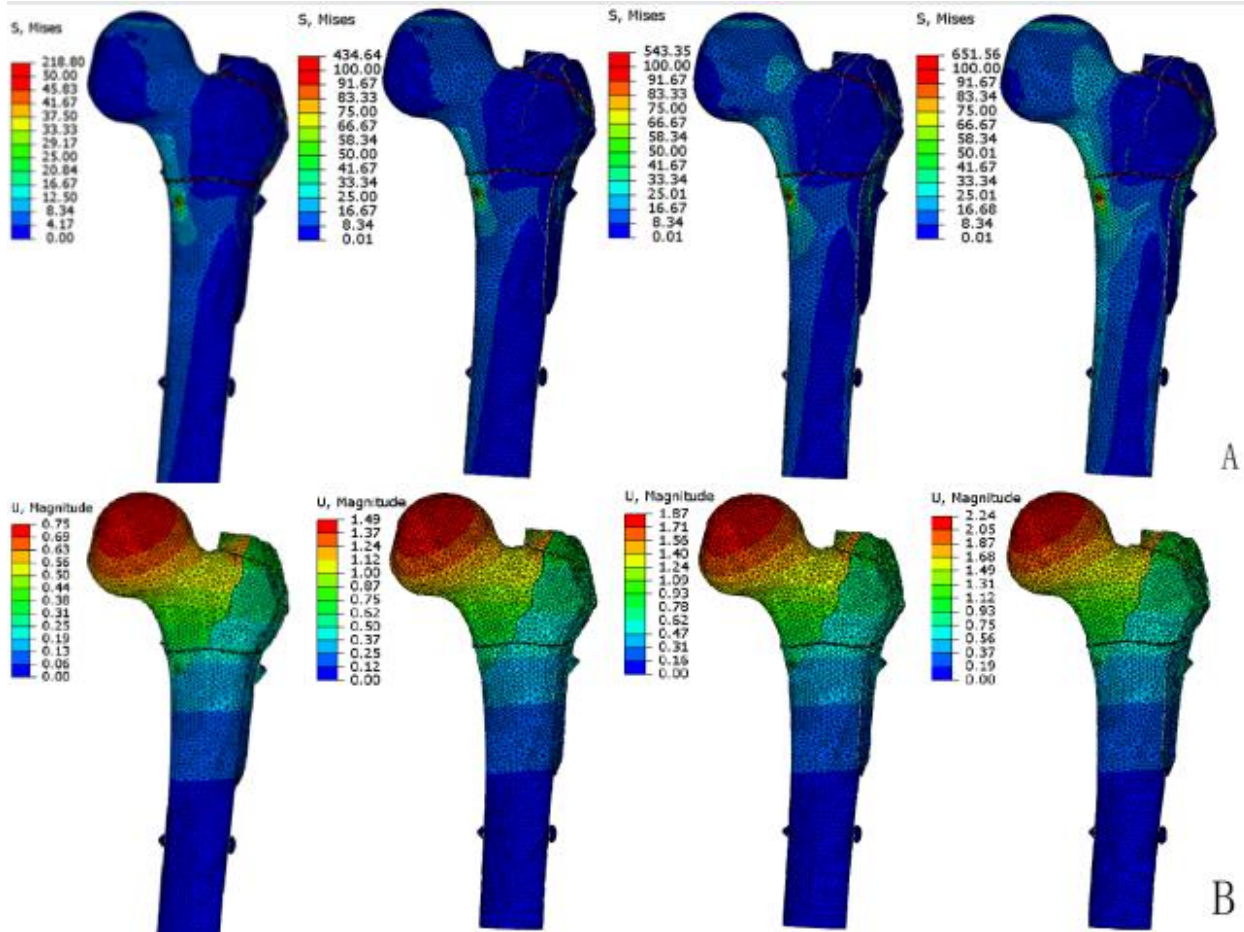


Supplementary Figure 7 Lateral defect fixed with proximal femoral anti-rotation intramedullary nail and lateral wall protection plate stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when lateral defect fixed with proximal femoral anti-rotation intramedullary nail (PFNA) and lateral wall protection plate; B: Displacement distribution when lateral defect fixed with PFNA and lateral wall protection plate.



**Supplementary Figure 8 Lateral defect fixed with proximal femoral anti-rotation intramedullary nail and steel wire stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when lateral defect fixed with proximal femoral anti-rotation intramedullary nail (PFNA) and steel wire; B: Displacement distribution when lateral defect fixed with PFNA and steel wire.**





**Supplementary Figure 9 Lateral defect fixed with proximal femoral anti-rotation intramedullary nail steel wire and lateral wall protection plate, the stress distribution and displacement distribution under different loading modes. A: Von Mises stress distribution map when lateral defect fixed with proximal femoral anti-rotation intramedullary nail (PFNA), steel wire and lateral wall protection plate; B: Displacement distribution when lateral defect fixed with PFNA, steel wire and lateral wall protection plate.**

**Supplementary Table 1 Numbers of elements and nodes of the models**

		ITN				PFNA							
		Inside		Outside		Inside and outside		and Inside defect		Outside defect		Inside and outside defect	
		Node	Element	Node	Element	Node	Element	Node	Element	Node	Element	Node	Element
Femoral Cortex- Proximal		16673	8408	18343	9180	16673	8408	16686	8399	18399	9268	16686	8399
Cancellous femur-proximal		149657	102716	152335	104342	14965	102716	101841	70776	10608	73643	10184	70776
						7				7		1	
Femoral Cortex- Distal		159635	107100	102302	68246	10230	68246	100009	65208	94872	62186	94872	62186
						2							
Cancellous femur-distal		112927	75415	106702	71017	10670	71017	99944	66092	91986	60542	91986	60542
						2							
Main nail		160546	102606					195565	130063				
Cephalospin-Lag Screw		107605	68846					57919	37079				
Cephalospin- Compression Screw		66137	41932										
ACINFN		10842	9317					10842	9317				

ITN: InterTAN; PFNA: Proximal femoral anti-rotation intramedullary nail.