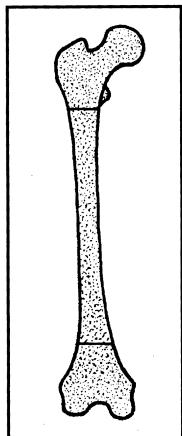
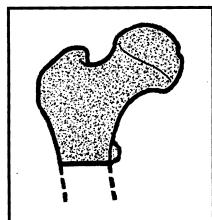


# FEMUR

BONE: FEMUR (3)

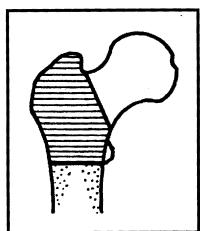


Location: Proximal segment (31)

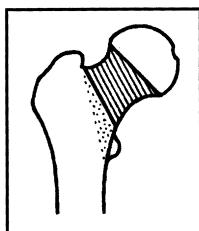


Types:

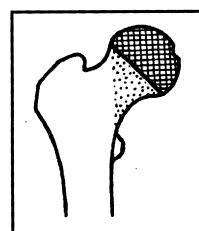
A. Trochanteric area (31-A)



B. Neck fractures (31-B)



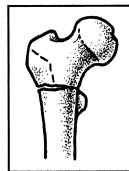
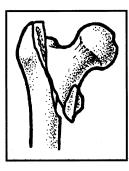
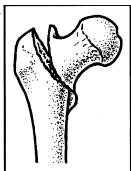
C. Head fractures (31-C)



Groups:

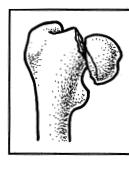
Femur, proximal trochanteric (31-A)

1. Perto-chanteric simple (31-A1)
2. Perto-chanteric multifrag-mentary (31-A2)
3. Intertro-chanteric (31-A3)



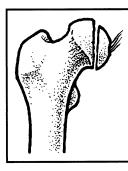
Femur, proximal, neck fracture (31-B)

1. Subcapital with slight displacement (31-B1)
2. Transcer-vical (31-B2)
3. Subcapital with marked displacement (31-B3)



Femur, proximal, head fracture (31-C)

1. Split (31-C1)
2. With de-pression (31-C2)
3. With neck fracture (31-C3)



**Subgroups and Qualifications:**

Femur, proximal, pectrochanteric simple (only 2 fragments) (31-A1)

**1. Along intertrochanteric line**

(31-A1.1)

**2. Through the greater trochanter**

(31-A1.2)

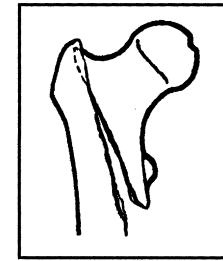
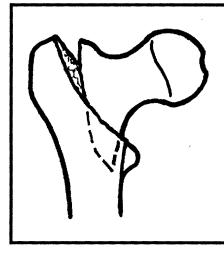
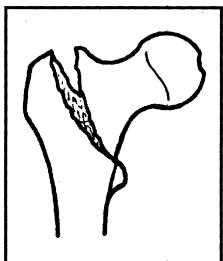
(1) nonimpacted

(2) impacted

**3. Below lesser trochanter (31-A1.3)**

(1) high variety, medial fracture line at lower limit of lesser trochanter

(2) low variety, medial fracture line in diaphysis below lesser trochanter

**A1**

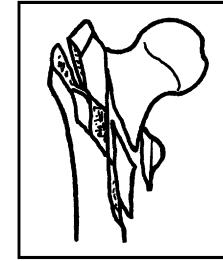
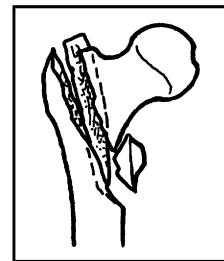
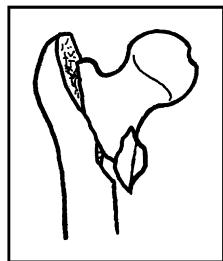
Femur proximal, trochanteric fracture, pectrochanteric multifragmentary (always have posteromedial fragment with lesser trochanter and adjacent medial cortex) (31-A2)

**1. With 1 intermediate fragment**

(31-A2.1)

**2. With several intermediate fragments**

(31-A2.2)

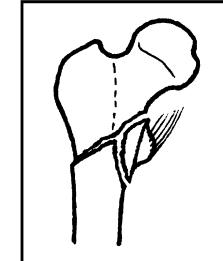
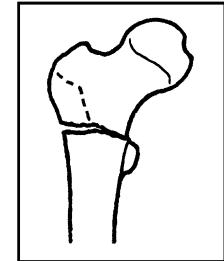
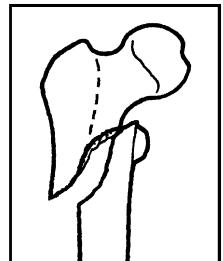
**3. Extending more than 1 cm below lesser trochanter (31-A2.3)****A2**

Femur, proximal, trochanteric area, intertrochauteric fracture (31-A3)

**1. Simple oblique (31-A3.1)****2. Simple transverse (31-A3.2)****3. Multifragmentary (31-A3.3)**

(1) extending to greater trochanter

(2) extending to neck

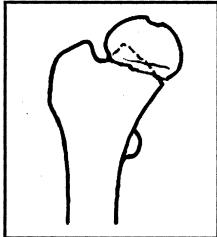
**A3**

Femur, proximal, neck fracture, slight displacement (31-B1)

**1. Impacted in valgus  $\geq 15^\circ$**

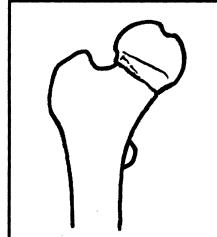
- (31-B1.1) (Garden 1)
- (1) posterior tilt  $< 15^\circ$
- (2) posterior tilt  $> 15^\circ$

**B1**

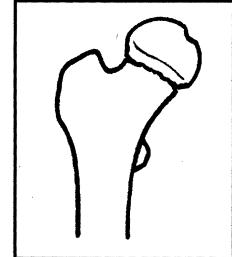


**2. Impacted in valgus  $< 15^\circ$**

- (31-B1.2) (Garden 1/2)
- (1) posterior tilt  $< 15^\circ$
- (2) posterior tilt  $> 15^\circ$



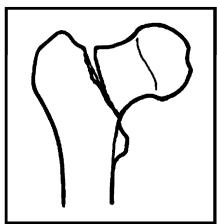
**3. Nonimpacted (31-B1.3) (Garden 2)**



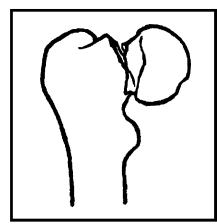
Femur, proximal, neck fracture, transcervical (31-B2)

**1. Basicervical (31-B2.1)**

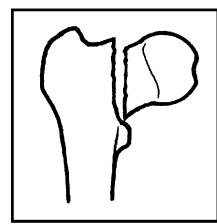
**B2**



**2. Midcervical adduction (31-B2.2)**



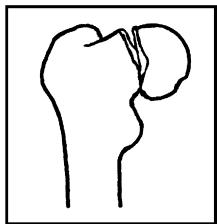
**3. Midcervical shear (31-B2.3)**



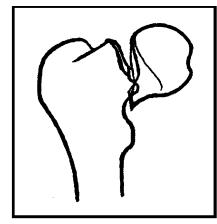
Femur, proximal, neck fracture, sub-capital, nonimpacted displaced (31-B3)

**1. Moderate displacement in varus and external rotation (31-B3.1) (Garden 3)**

**B3**

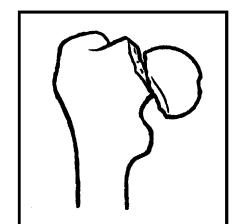


**2. Moderate displacement with vertical translation and external rotation (31-B3.2) (Garden 4)**



**3. Marked displacement (31-B3.3) (Garden 3/4)**

- (1) in varus
- (2) with translation



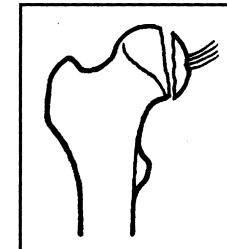
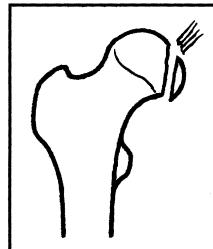
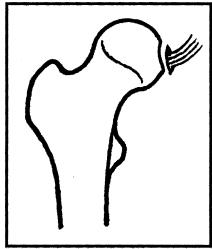
Femur, proximal, head fracture, split (31-C1)

1. Avulsion of ligamentum teres  
(31-C1.1)

2. With rupture of ligamentum teres  
(31-C1.2)

3. Large fragment (31-C1.3)

**C1**



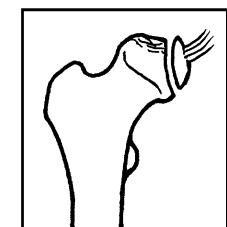
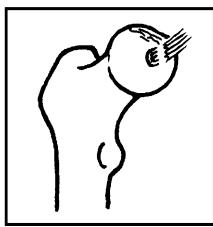
Femur, proximal, head fracture, with depression (31-C2)

1. Posterior and superior (31-C2.1)

2. Anterior and superior (31-C2.2)

3. Split depression (31-C2.3)

**C2**



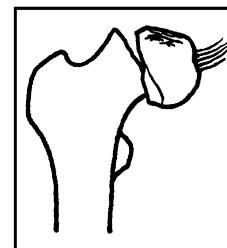
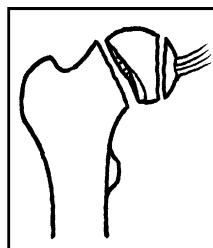
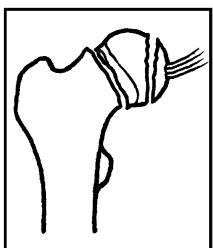
Femur, proximal, head fracture with neck fracture (31-C3)

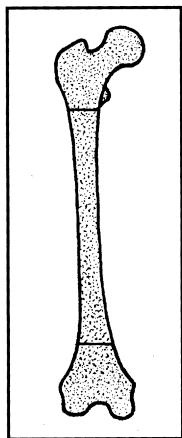
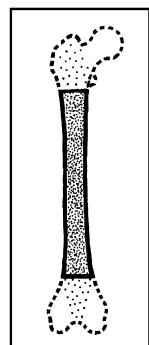
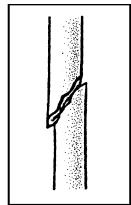
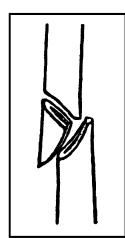
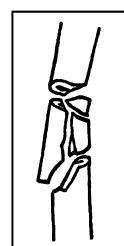
1. Split and transcervical neck fracture  
(31-C3.1)

2. Split and subcapital neck fracture  
(31-C3.2)

3. Depression and neck fracture  
(31-C3.3)

**C3**



**BONE: FEMUR (3)****Location: Diaphyseal segment (32)****Types:**  
**A. Simple (32-A)****B. Wedge (32-B)****C. Complex (32-C)****Groups:**

Femur, diaphyseal, simple fracture (32-A)

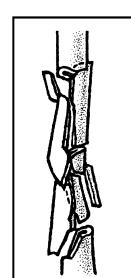
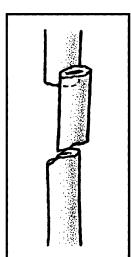
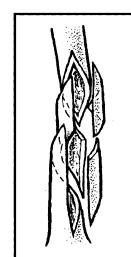
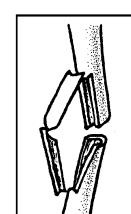
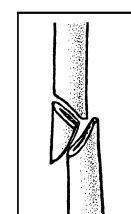
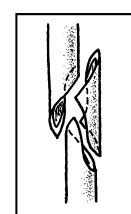
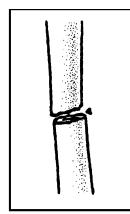
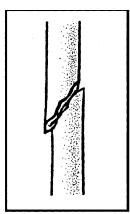
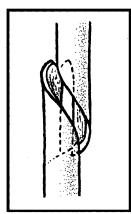
1. Spiral (32-A1)
2. Oblique ( $\geq 30^\circ$ ) (32-A2)
3. Transverse ( $< 30^\circ$ ) (32-A3)

Femur, diaphyseal, wedge fracture (32-B)

1. Spiral wedge (32-B1)
2. Bending wedge (32-B2)
3. Fragmented wedge (32-B3)

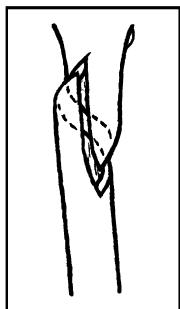
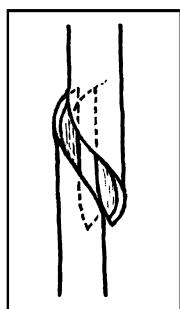
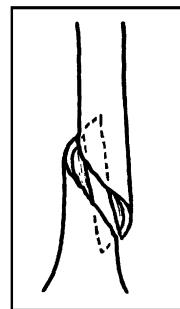
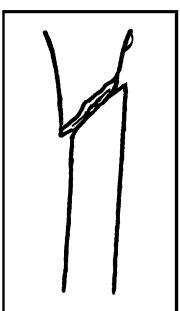
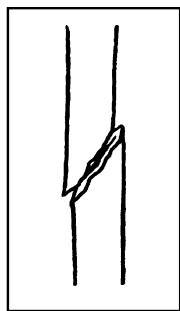
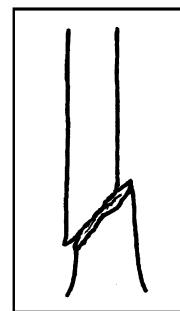
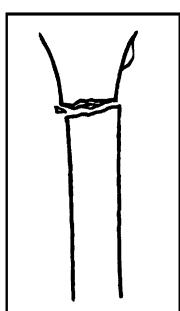
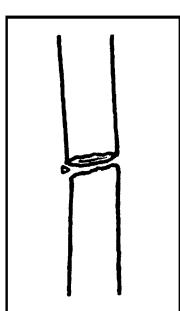
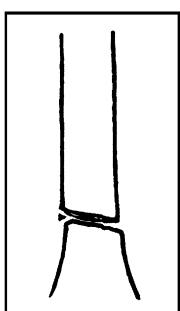
Femur, diaphyseal, complex (32-C)

1. Spiral (32-C1)
2. Segmental (32-C2)
3. Irregular (32-C3)



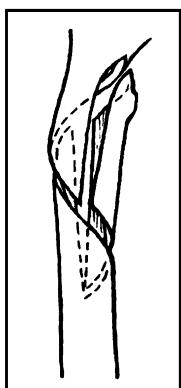
**Subgroups and Qualifications:**

Femur, diaphyseal, simple spiral (32-A1)

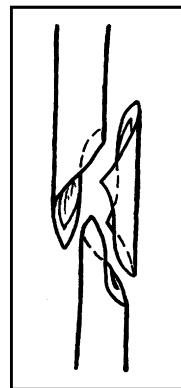
**1. Subtrochanteric zone (32-A1.1)****A1****2. Middle zone (32-A1.2)****3. Distal zone (32-A1.3)**Femur, diaphyseal, simple oblique ( $\geq 30^\circ$ ) (32-A2)**1. Subtrochanteric zone (32-A2.1)****A2****2. Middle zone (32-A2.2)****3. Distal zone (32-A2.3)**Femur, diaphyseal, transverse ( $<30^\circ$ ) (32-A3)**1. Subtrochanteric zone (32-A3.1)****A3****2. Middle zone (32-A3.2)****3. Distal zone (32-A3.3)**

Femur, diaphyseal, wedge spiral (32-B1)  
1. Subtrochanteric zone (32-B1.1)

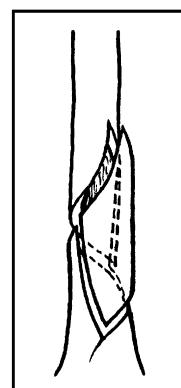
**B1**



2. Middle zone (32-B1.2)



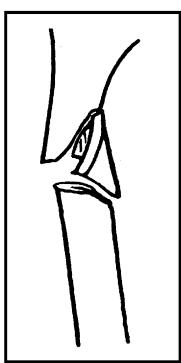
3. Distal zone (32-B1.3)



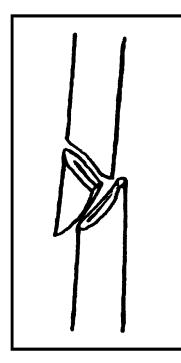
Femur, diaphyseal, wedge, bending (32-B2)

1. Subtrochanteric zone (32-B2.1)

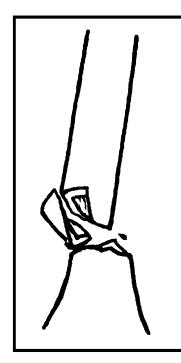
**B2**



2. Middle zone (32-B2.2)



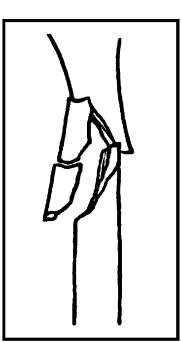
3. Distal zone (32-B2.3)



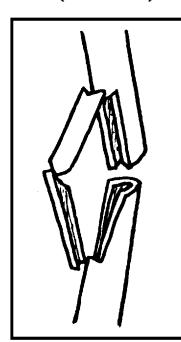
Femur, diaphyseal, wedge fragmented (32-B3)

1. Subtrochanteric zone (32-B3.1)

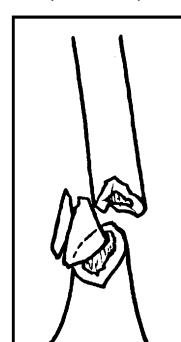
**B3**



2. Middle zone (32-B3.2)



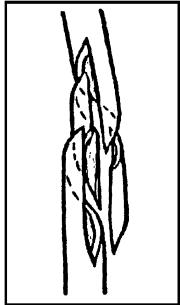
3. Distal zone (32-B3.3)



Femur, diaphyseal, complex spiral (32-C1)

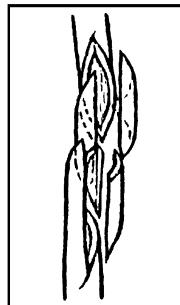
- (1) pure diaphyseal
- (2) proximal diaphyseal-metaphyseal
- (3) distal diaphyseal-metaphyseal

**1. With 2 intermediate fragments**  
(32-C1.1)

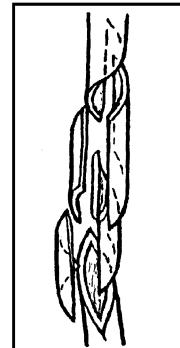


**C1**

**2. With 3 intermediate fragments**  
(32-C1.2)



**3. With more than 3 intermediate fragments**  
(32-C1.3)



Femur, diaphyseal, complex segmental (32-C2)

**1. With 1 intermediate segmental fracture**  
(32-C2.1)

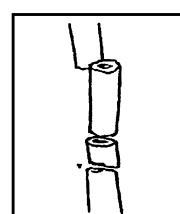
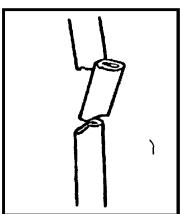
- (1) pure diaphyseal
- (2) proximal diaphyseal-metaphyseal
- (3) distal diaphyseal-metaphyseal
- (4) oblique lines
- (5) transverse and oblique lines

**2. With 1 intermediate segmental and additional wedge fragments**  
(32-C2.2)

- (1) pure diaphyseal
- (2) proximal diaphyseal-metaphyseal
- (3) distal diaphyseal-metaphyseal
- (4) distal wedge
- (5) 2 wedges, proximal and distal

**3. With 2 intermediate segmental fragments**  
(32-C2.3)

- (1) pure diaphyseal
- (2) proximal diaphyseal-metaphyseal
- (3) distal diaphyseal-metaphyseal



**C2**



Femur, diaphyseal, complex irregular (32-C3)

**1. With 2 or 3 intermediate fragments**  
(32-C3.1)

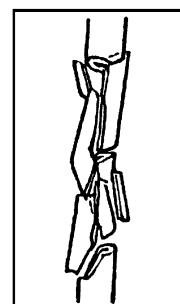
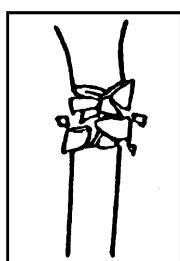
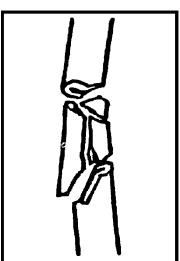
- (1) 2 main intermediate fragments
- (2) 3 main intermediate fragments

**2. With limited shattering (<5cm)**

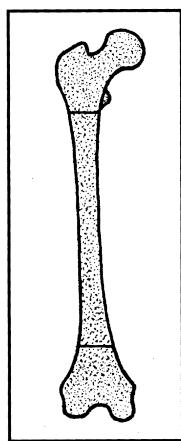
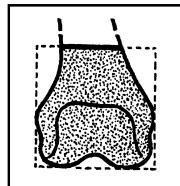
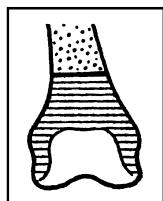
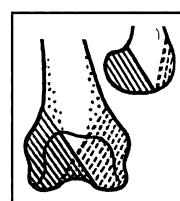
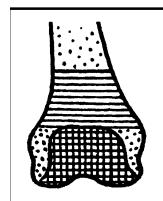
- (32-C3.2)
- (1) proximal zone
- (2) middle zone
- (3) distal zone

**3. With extensive shattering ( $\geq 5\text{cm}$ )**

- (32-C3.3)
- (1) pure diaphyseal
- (2) proximal diaphyseal-metaphyseal
- (3) distal diaphyseal-metaphyseal



**C3**

**BONE: FEMUR (3)****Location: Distal segment (33)****Types:****A. Extra-articular (33-A)****B. Partial articular (33-B)****C. Complete articular (33-C)****Groups:**

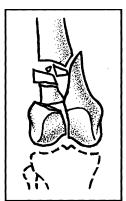
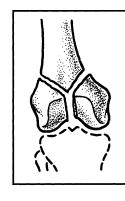
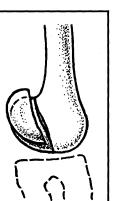
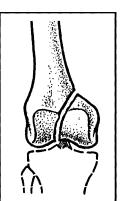
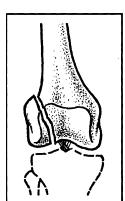
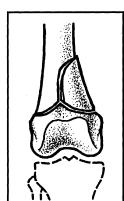
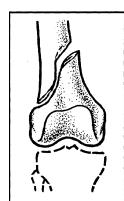
Femur, distal, extra-articular (33-A)

1. Simple  
(33-A1)2. Metaphyseal  
wedge  
(33-A2)3. Metaphyseal  
complex  
(33-A3)

Femur, distal, partial articular (33-B)

1. Lateral  
condyle,  
sagittal  
(33-B1)2. Medial  
condyle,  
sagittal  
(33-B2)3. Frontal  
(33-B3)

Femur, distal, complete articular (33-C)

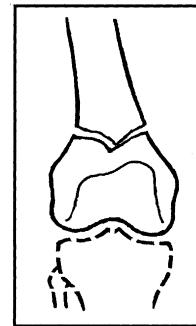
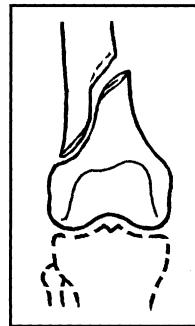
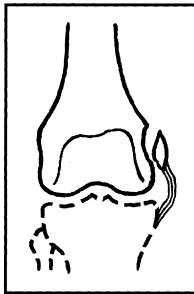
1. Articular  
simple, meta-  
physeal simple  
(33-C1)2. Articular  
simple, meta-  
physeal multi-  
fragmentary  
(33-C2)3. Multifrag-  
mentary  
articular  
fracture  
(33-C3)

**Subgroups and Qualifications:**

Femur, distal, extra-articular simple (33-A1)

**1. Apophyseal (33-A1.1)**

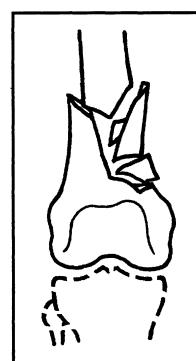
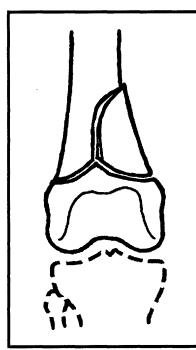
- (1) avulsion lateral epicondyle
- (2) avulsion medial epicondyle

**2. Metaphyseal oblique or spiral (33-A1.2)****3. Metaphyseal transverse (33-A1.3)****A1**

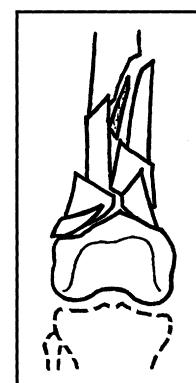
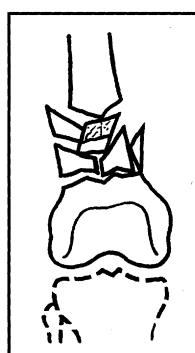
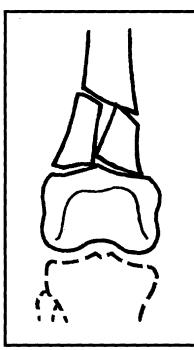
Femur, distal, extra-articular, metaphyseal wedge (33-A2)

**1. Intact wedge (33-A2.1)**

- (1) lateral
- (2) medial

**2. Fragmented lateral (33-A2.2)****3. Fragmented medial (33-A2.3)****A2**

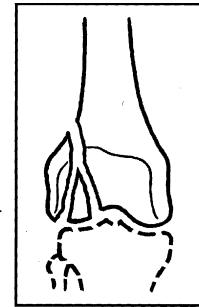
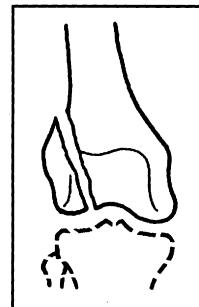
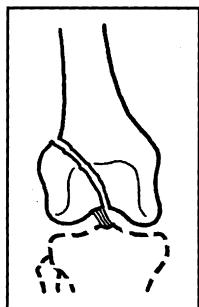
Femur, distal, extra-articular, metaphyseal complex (33-A3)

**1. With an intermediate split segment (33-A3.1)****2. Irregular limited to metaphysis (33-A3.2)****3. Irregular extending to diaphysis (33-A3.3)****A3**

Femur, distal, partial articular, lateral condyle, sagittal (33-B1)

1. Simple through the notch (33-B1.1)    2. Simple through load bearing surface (33-B1.2)    3. Multifragmentary (33-B1.3)

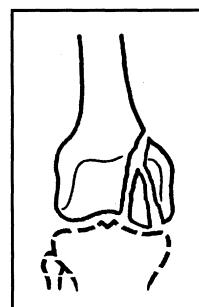
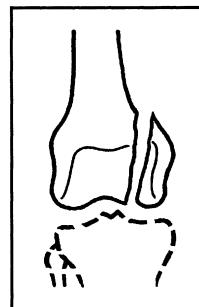
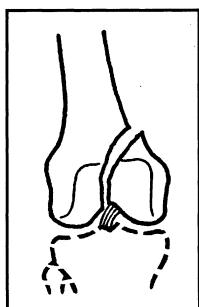
B1



Femur, distal, partial articular, medial condyle, sagittal (33-B2)

1. Simple through notch (33-B2.1)    2. Simple through load bearing surface (33-B2.2)    3. Multifragmentary (33-B2.3)

B2



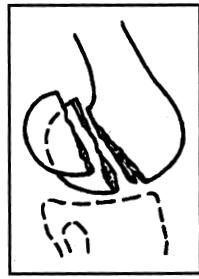
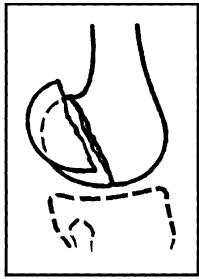
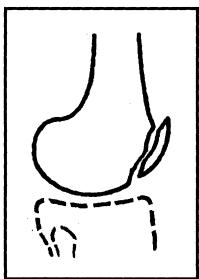
Femur, distal, partial articular, frontal (33-B3)

1. Anterior and lateral flake fracture (33-B3.1)

2. Unicondylar posterior (Hoffa) (33-B3.2)  
(1) lateral  
(2) medial

3. Bicondylar posterior (33-B3.3)

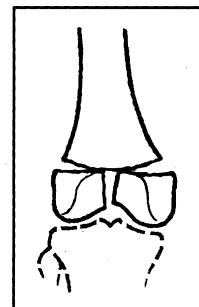
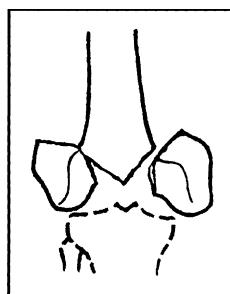
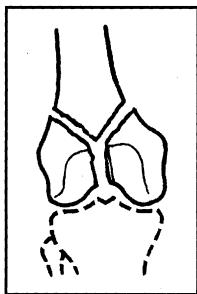
B3



Femur, distal, complete articular, articular simple, metaphyseal simple (33-C1)  
1. T- or Y-shaped with slight displacement (33-C1.1)      2. T- or Y-shaped with marked displacement (33-C1.2)

3. T-shaped epiphyseal (33-C1.3)

**C1**



Femur, distal, complete articular, articular simple, metaphyseal multifragmentary (33-C2)

1. With intact wedge (33-C2.1)

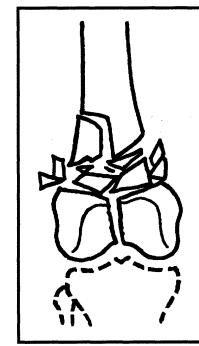
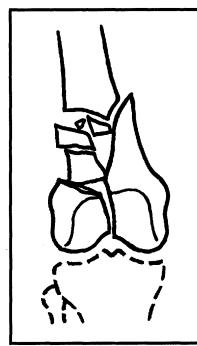
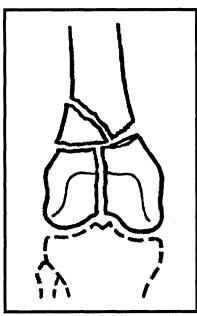
- (1) lateral
- (2) medial

2. With fragmented wedge (33-C2.2)

- (1) lateral
- (2) medial

3. Complex (33-C2.3)

**C2**



Femur, distal, complete articular, articular multifragmentary (33-C3)

1. Metaphyseal simple (33-C3.1)

2. Metaphyseal multifragmentary (33-C3.2)

3. Metaphyseal-diaphyseal multifragmentary (33-C3.3)

**C3**

