

Type <i>Gustilo</i>	Type Pichkhadze		Wound location in relation to the fracture zone  <i>Which fractures should be classified as closed and which are open fractures.</i>	Soft Tissue Damage						Microbial contamination level	The nature of the fracture																																		
Energy damaged  Degree of fracture	Wound size <i>Skin coverage</i>			Degree of Soft Tissue Damage	<u>The nature of the wound:</u>	3 - IO		3 - MT		3 - NV	3 - DO	According to classification of infectious complication <b>Infection rate</b>	Periosteal stripping	DB  Def ect of the Bone	According to the Clinical and Biomechanical Classification of Fractures – Pichkhadze <b>BCLBF</b>																														
	along the length	around the perimeter				Wound size <i>Skin coverage</i>	Skin Coverage	Muscle/tendon injury (MT):  <i>Size of muscle and tendon wound along the length and perimeter of the limb segment</i>		<u>Neurovascular lesions</u> (NV):	DO - <u>Damage - deficiency</u> of the skin and underlying soft tissues along the perimeter of a limb segment																																		
I  Low energy damaged. Exposure duration <1 min  <b>Monofocal fracture</b> with no or moderate displacement	I	of a limb segment  <b>IO1</b>  <b>0°</b>	Without / With direct penetration into the fracture zone  Especially if significant	Minimal, minor muscle damage	A – cut and stabbed B - bruised and torn	IO-1 - skin lesion from the inside outwards in <1 cm, contused edges	Local coverage	MT-1 - no muscle damage – minimal	MT1 - 0°	NV-1 - no neurovascular lesions	DO-1 - there is no shortage.  <b>0°</b>	Clean or minimal. Often the skin is perforated from the inside with a bone fragment. <b>0% - 2%</b>	N o	1 - no bone defe ct	Simple fracture pattern with minimal comminution. Periosteum saved. <b>I - Simple</b>  <i>Biomechanical characteristic</i> The lever's properties <b>Joint</b> <b>Monofocal</b> Level of Extra/Intra-articular fragments <b>Congruence</b> <table><tr><td>Bone</td><td>Third</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>?</td><td>1/2/3</td><td>A</td><td>1,2,3</td><td>+/-</td><td>Extra</td><td>+/-</td><td>No</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Bone	Third														?	1/2/3	A	1,2,3	+/-	Extra	+/-	No							
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II  Moderate energy damaged. Exposure duration < 1 hour  <b>Monofocal fracture</b> with moderate or complete displacement	<b>IIA</b>	<b>IO2</b>  <b>&lt;60°</b>	contamination of the wound  The role of antibiotics should not be overestimated	Moderate, more significant muscle damage with areas of necrosis		IO -2 A - lacerated skin wound a length of 1 cm to 5 cm, contused of wound edges	Local coverage	MT-2 - <b>one</b> muscle group compartment, <b>limited muscle</b> injury - a length from 1 cm to 5 cm	MT2 - >0° - <60°	NV-1 - no neurovascular lesions	DO-1 - there is no shortage.  <b>0°</b>	Moderate contamination. Primary open fracture, from outside to inside. Sites of muscle necrosis. Perhaps the development of suppuration. <b>2% - 7%</b>	N o	1 - no bone defe ct	Moderate comminution The periosteum is preserved, but there are defects <b>II- Moderate</b>  <i>Biomechanical characteristic</i> The lever's properties <b>Monofocal</b> Level of Extra/Intra-articular fragments <b>Congruence</b> <table><tr><td>Bone</td><td>Third</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>?</td><td>1/2/3</td><td>A</td><td>1,2,3</td><td>+/-</td><td>Extra</td><td>+/-</td><td>No</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Bone	Third														?	1/2/3	A	1,2,3	+/-	Extra	+/-	No							
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<b>IIB</b>  <b>&gt;5 cm</b> <b>&lt;10 cm</b>	<b>IO3A</b>  <b>&lt;120°</b>		IO -2 B - skin lesion in length from 5 cm to 10 cm, moderate contusion of wound edges	Local coverage	MT-3A - two muscle group compartment, <b>limited muscle</b> injury - in length from 5 cm to 10 cm	MT3 A - >60° - <120°	NV-1 - no neurovascular lesions	DO-2 - skin deficiency up to 5 cm + muscle tissue within the same muscle group. <b>&gt;0° - &lt;30°</b>																																					
III A  High energy damaged. Exposure duration < 2 hours  <b>Polyfocal (Segmental) fracture</b> with displacement	III A	<b>IO3B</b>  <b>&lt;180°</b>	With direct penetration into the fracture zone, including possibly through the penetrating wound of the joint located on another adjacent segment of the same limb  Do not underestimate the possibility of infection and the development of osteomyelitis	Extensive / Severe crushing of soft tissues. Extensive area of muscle necrosis	C – high contused, bruised	IO -3 - skin lesion from outside and greater than 10 cm, contusion, devitalized edges	Local coverage	MT-3B - two muscle groups compartment, considerable injury - in length from 10 cm	MT3 B - >120° - <180°	NV-1 - no neurovascular lesions	DO-1 - there is no shortage.  DO-3 -skin deficiency up to 10 cm + muscle tissue deficiency within two muscle groups. <b>&gt;0° - &lt;60°</b>	Extensive. Primary open fracture, from outside to inside, with contamination of the wound. <b>7% - 9%</b> The threat of osteomyelitis.	Y e s	1 - no bone defect  2 - bone defect up to 5 cm	Severe comminution or segmental fractures, damage to the periosteum and soft tissues to a limited extent. Closing the bone with soft tissue is not difficult. <b>IIIA - Severe Polyfocal</b>  <i>- Osteosynthesis &gt; Ex Fix</i> <table><tr><td>Bone</td><td>Third</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>?</td><td>1/2/3</td><td>B</td><td>3</td><td>+/-</td><td>Extra</td><td>+/-</td><td>No</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Bone	Third														?	1/2/3	B	3	+/-	Extra	+/-	No							
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III B  High energy damaged. Exposure duration < 6 hours <b>Polyfocal (Segmental) fracture</b> with displacement There is a very high risk of infection.	III B	<b>IO4</b>  <b>&lt;270°</b>	IO -4 - significant contusion on to the entire thickness, abrasions, skin defect	Requires free tissue flap or rotation al flap coverage	MT-4 - muscle defect, tendon laceration, extensive contusion - in length from 10 cm	MT4 >180° - <270°	NV-1 - no neurovascular lesions  NV-2 - Isolated <b>nerve</b> damage NV-3 - localized <b>vascular</b> lesion (damage to the intima, occlusion or rupture) NV-4 - is a common segmental <b>vessel</b> damage NV-5 - combined <b>neurovascular</b> damage, including subtotal or even total dissection	DO-1 - there is no shortage. DO-4 - skin deficiency up to or more than 10 cm + muscle tissue deficiency of up to three muscle groups. <b>&gt;60° - &lt;180°</b>	Extensive. With contamination of the wound by the earth. <b>10% - 50%</b> The threat of deep suppuration and osteomyelitis.	Y e s	1 - no bone defect 3 - bone defect up to 9 cm /2 4 - bone defect up to 12cm, /2 5 - bone defect over 12cm /2 - in the elderly	Severe comminution or segmental fractures Bone fragments are exposed over an extensive length, damage to the periosteum, necrosis and tissue defect. <i>- Osteosynthesis &gt; Ex Fix</i> <b>IIIB -</b>  Defect <b>58mm</b> <table><tr><td>Bone</td><td>Third</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>?</td><td>1/2/3</td><td>B</td><td>3</td><td>+/-</td><td>Extra</td><td>+/-</td><td>No</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Bone	Third														?	1/2/3	B	3	+/-	Extra	+/-	No										
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III C  High-energy and gunshot fractures/ fractures in the compartment syndrome. Exposure duration < 6 hours / > 6 hours <b>Polyfocal (Segmental) fracture</b>	III C	<b>IO5</b>  <b>&gt;270°</b>	IO -5 - extensive, open skin detachment, skin loss	Typically requires flap coverage	MT-5 - compartment syndrome/ crush syndrome	MT5 - >270°		DO-5 - skin deficiency of more than 10 cm + muscle tissue deficiency of more than four muscle groups. <b>&gt;180°</b>	Extensive. The threat of gangrene of the extremity against the background of Pseudomonas aeruginosa <b>25% - 50%</b>	Y e s		Severe comminution or segmental fractures <b>IIIC - Severe Polyfocal: Monopolar/Bipolar</b> <b>2 - Osteosynthesis&gt; Ex Fix</b> , - respectively the <i>Biomechanical Concept of Fixation of Fragments.</i> <b>BConceptL&amp;PBF</b>  Defect <b>58mm</b> <b>Regenerate-? mm</b> <table><tr><td>Bone</td><td>Third</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>?</td><td>1/2/3</td><td>BC</td><td>3</td><td>+/-</td><td>Extra</td><td>+/-</td><td>No</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Bone	Third														?	1/2/3	BC	3	+/-	Extra	+/-	No										
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1 - Limb revascularization and skin plastic are indicated.

2 - Osteosynthesis > Ex Fix, - respectively the Biomechanical Concept of Fixation of Bone Fragments.