

AO Trauma Course— Advanced Principles of Fracture Management

December 1–5, 2024
Davos, Switzerland

Lecture room:
Davos 1
Practical exercise room:
Davos 2

PRELIMINARY PROGRAM

Course description

This AO Trauma Course—Advanced Principles of Fracture Management is one of the several competency-based curriculum events in 2024 that are built around a specific framework of competencies and learning objectives. They feature a balanced mix of educational methods with a strong focus on interactive sessions.

Online pre-course self-assessment prepares participants for the course and allows the faculty to tailor the course to participants' needs.

The course will be delivered in a modular format. Each module consists of several evidence-based lectures covering key information. Case discussions in small groups will help participants understand decision-making processes and further develop their fracture management skills. Panel discussions and interactive sessions will promote interactivity between faculty and course participants. Participants may also bring their own cases for discussion with the faculty. In practical exercises participants will be trained in the application of various techniques.

After the course, an online postcourse self-assessment will provide participants with important feedback on how much they have learned.

Goal of the course

The AO Trauma Course—Advanced Principles of Fracture Management is part of the educational program teaching current concepts and fundamental principles in the treatment of complex injuries, incorporating the latest techniques in operative fracture management. The AO Trauma Advanced Principles course builds upon the AO principles and techniques learned in the AO Trauma basic principles course and focuses on more complex injuries.

Target participants

The AO Trauma Course—Advanced Principles of Fracture Management is targeted at certified orthopedic and trauma surgeons who are at the threshold of becoming independent surgeons and taking over decision-making responsibility for the treatment of complex injuries. Participants must have completed the AO Trauma Course—Basic Principles of Fracture Management and must be actively involved in trauma management.

Learning objectives

Upon completion of this course, participants will be able to:

- Discuss and apply reduction techniques in fracture management with attention to soft tissue
- Assess and plan a treatment for complex diaphyseal and periarticular fractures
- Demonstrate strategies for assessing and treating open fractures and soft-tissue injuries
- Plan appropriate management for patients with pelvic injuries and polytrauma
- Recognize complications and manage these accordingly

Chairpersons



Thomas Large

Grady Memorial Hospital/Emory University
Atlanta, United States



Theodoros Tosounidis

University of Crete
Heraklion, Greece

Faculty

Mazen Ali	Abdalla Al Belooshi	An-najah National University Hospital, Nablus	Palestine
Maher Ahmed	Alzahrani Al-Zubaidi	Orthocure Medical Center, Dubai	UAE
Marco Nir	Berlusconi Cohen	Prince Sultan Military Medical City, Riyadh	Saudi Arabia
Gregory Christian	Della Rocca Fang	Al-nahrain medical college /Imamin khadymain	Iraq
Paulo Gustavo	Felicissimo Fiorentini	ASST PINI CTO MILAN, Milan	Italy
David Steinar	Forsh Havik	Rabin Medical Center- Beilinson Campus	Israel
Ali Iikka	Jarragh Lantto	University of Missouri, Columbia	USA
Jason May Fong	Lowe Mak	The University of Hong Kong, Queen Mary	Hong Kong
Mattia Tomoyuki	Mocchi Noda	Hospital CUF Descobertas, Lisbon	Portugal
Carlos Antoine	Olaya González Poichotte	Banfield	Argentina
Mircea Radu	Popescu	Mount Sinai Health System, New York	USA
Mara Patrick	Schenker Schottel	St.Olavs Hospital, Trondheim	Norway
Andrey Pamela	Smirnov Vergara	Jaber Al Ahmad hospital, Mishriff	Kuwait
André Wajnsztejn		Oulu University Hospital, Oulu	Finland
		Banner—University Medical Center Tucson	USA
		Waikato DHB, Hamilton	New Zealand
		asst Gaetano Pini CTO Milano, Milano	Italy
		Kawasaki Medical School General Medical	Japan
		Hospital Universitario 12 de Octubre, Madrid	Spain
		Centre Hospitalier Loire Vendée Océan, Challans	France
		County Hospital Timisoara, Timisoara	Romania
		Grady Memorial Hospital, Atlanta	USA
		University of Vermont, Vermont	USA
		AS Ida-Tallinna Keskhaigla, Tallinn	Estonia
		Hospital del Trabajador, Santiago	Chile
		Hospital Israelites Albert Einstein, Sao Paulo	Brazil

Sunday

December 1, 2024

15:00	Opening of the Davos Congress Centre
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15:00–17:00	Registration of participants
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17:00–19:00	Opening Ceremony and Founders' Reception
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Monday

December 2, 2024

LOCATION: Davos 1

08:00–08:10	Welcome and introduction to the course—how to get the most out of your course	T Large, T Tosounidis
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Module 1

Moderator: J Lowe

Review of the principles and new techniques

Upon completion of this module, participants will be able to:

- Review concepts of relative and absolute stability
- Demonstrate appropriate techniques of direct and indirect reduction with attention to the soft tissue
- Identify clinical indications for locked plating
- Describe the role of soft tissue in fracture healing
- Describe the role of preoperative planning

08:10–08:25	Review of the principles of fracture management	D Forsh
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08:25–08:35	Clinical applications for locked plating	C Olaya Gonzalez
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08:35–08:45	Fracture reduction	N Cohen
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08:45–09:00	Soft tissue injury and open fractures	M Schenker
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09:00–09:10	Preoperative planning—key to success	M Mocchi
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09:10–09:25	Module 1—discussion and summary	J Lowe
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09:25–09:45	Coffee break and location change to discussion group rooms	
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09:45–11:05	Small group discussion 1	
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Reduction techniques—concept and application

Group 1 – Landwasser 1

A Al Belooshi, M
Berlusconi

Group 2 – Landwasser 2

G Della Rocca, A
Jarragh

Group 3 – Landwasser 3	MF Mak, M Mocchi
Group 4 – Landwasser 4	C Olaya Gonzalez, M Schenker
Group 5 – Landwasser 5	A Smirnov, G Fiorentini
Group 6 – Landwasser 6	C Fang, P Felicissimo
Group 7 – Landwasser 7	S Havik, A Poichotte
Group 8 – Landwasser 8	T Noda, MR Popescu
Group 9 – Landwasser 9	M Abdalla, P Vergara
Group 10 – Landwasser 10	P Schottel, A Al-Zubaidi

11:05–11:10 Location change to practical exercise room

11:10–12:25	Practical exercise 1	T Large, N Cohen
	Unknown Humeral Fracture Reduction Challenge	
	Table 1	M Alzahrani, G Della Rocca
	Table 2	C Fang, P Felicissimo
	Table 3	I Lantto, J Lowe
	Table 4	M Mocchi, M Schenker
	Table 5	D Forsh, MF Mak
	Table 6	A Jarragh, A Wajnsztein
	Table 7	S Havik, A Poichotte
	Table 8	T Noda, MR Popescu
	Table 9	M Abdalla, P Vergara
	Table 10	P Schottel, A Al-Zubaidi

12:25–13:45 Lunch break

LOCATION: Davos 1

Module 2

Injuries of the upper limb

Module 2a

Moderator: A Smirnov

Injuries of the upper arm

Upon completion of this module, participants will be able to:

- Identify the indications for surgical treatment of proximal humeral fractures including prosthetic replacement
- Identify the expected outcomes and appropriate treatment options for clavicular and scapular fractures
- Plan treatment of diaphyseal and distal articular fractures of the humerus

13:45–14:00	Proximal humeral fractures—to fix, replace, or treat nonoperatively?	M Schenker
14:00–14:10	Complex humeral shaft fractures	A Jarragh
14:10–14:20	Shoulder Girdle Fractures (Clavicle and Scapula)	G Fiorentini
14:20–14:30	Distal humerus—intraarticular fractures and complications	C Fang
14:30–14:50	Module 2a—Discussion and summary	A Smirnov
14:50–15:10	Coffee break	
15:10–16:30	Practical exercise 2 Fixation of a four-fragment fracture in the proximal humerus using a Proximal Humeral Interlocking System (PHILOS) plate	M Schenker, A Smirnov
	Table 1	P Felicissimo, D Forsh
	Table 2	J Lowe, C Olaya Gonzalez
	Table 3	A Al Belooshi, M Berlusconi
	Table 4	A Jarragh, A Wajnsztein
	Table 5	G Fiorentini, M Mocchi
	Table 6	G Della Rocca, C Fang
	Table 7	S Havik, T Noda
	Table 8	A Poichotte, MR Popescu
	Table 9	M Abdalla, P Schottel
	Table 10	P Vergara, A Al-Zubaidi

16:30–16:40 Evaluation

Tuesday

December 3, 2024

LOCATION: Davos 1

08:00–08:05	Summary of day 1	T Large
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Module 2b

Moderator: G Della Rocca

Injuries of the lower arm

Upon completion of this module, participants will be able to:

- Describe the different surgical approaches to periarticular elbow injuries
- Recognize reduction and fixation options for diaphyseal forearm fractures
- Explain the key issues in the treatment of intraarticular distal radial fractures

08:05–08:15	Fracture dislocation of the elbow	G Della Rocca
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08:15–08:25	Complex forearm injuries	M Mocchi
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08:25–08:35	Distal radial fractures	C Fang
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08:35–09:05	Case-based panel discussion—upper limb	Moderator: G Della Rocca Panelists: M Schenker, A Jarragh, C Fang, G Fiorentini, M Mocchi
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09:05–09:10	Location change to discussion group rooms	
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09:10–10:25	Small group discussion 2	
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Upper extremity fractures—decision-making and methods of stabilization

Group 1 – Landwasser 1	C Olaya Gonzalez, M Schenker
Group 2 – Landwasser 2	M Berlusconi, MF Mak
Group 3 – Landwasser 3	P Felicissimo, J Lowe
Group 4 – Landwasser 4	D Forsh, A Smirnov
Group 5 – Landwasser 5	N Cohen, A Wajnsztein

Group 6 – Landwasser 6	G Della Rocca, I Lantto
Group 7 – Landwasser 7	S Havik, T Noda
Group 8 – Landwasser 8	A Poichotte, MR Popescu
Group 9 – Landwasser 9	M Abdalla, P Schottel
Group 10– Landwasser 10	P Vergara, A Al-Zubaidi

10:25–10:45 Coffee break

10:45–12:20	Practical exercise 3	G Della Rocca, C Fang
	Fixation of a distal humeral fracture 13C3 using a VA-LCP distal humeral plate	
	Table 1	J Lowe, A Smirnov
	Table 2	A Wajnsztej, M Mocchi
	Table 3	M Berlusconi, C Olaya Gonzalez
	Table 4	P Felicissimo, I Lantto
	Table 5	M Alzahrani, N Cohen
	Table 6	A Al Belooshi, G Fiorentini
	Table 7	T Noda, P Schottel
	Table 8	A Poichotte, A Al-Zubaidi
	Table 9	M Abdalla, S Havik
	Table 10	P Vergara, MR Popescu

12:20–13:25 Lunch break

LOCATION: Davos 1

Module 3

Injuries of the lower limb

Module 3a

Moderator: M Alzahrani**Injuries of the hip and femur**

Upon completion of this module, participants will be able to:

- Evaluate and plan appropriate reduction techniques, fixation options, and arthroplasty options for femoral neck fractures in the young and old population
- Prepare an adequate preoperative plan and define principles of fixation for intertrochanteric and subtrochanteric femoral fractures
- Recognize open reduction and internal fixation (ORIF) principles and techniques for femoral shaft and distal femoral fractures

13:25–13:40	Femoral neck fractures—different patients, different problems	J Lowe
13:40–13:50	Intertrochanteric fractures—treatment options and outcomes	A Smirnov
13:50–14:00	Current treatment options of subtrochanteric fractures	M Berlusconi
14:00–14:10	Femoral shaft fractures	A Wajnsztein
14:10–14:20	Distal femoral fractures—treatment options and outcomes	A Al Belooshi
14:20–14:35	Discussion and summary	M Alzharani
14:35–14:40	Location change to discussion group rooms	
14:40–15:55	Small group discussion 3	
	Fractures of the femur	
	Group 1 – Landwasser 1	M Alzahrani, G Fiorentini
	Group 2 – Landwasser 2	I Lantto, Ali Al Belooshi
	Group 3 – Landwasser 3	MF Mak, C Olaya Gonzalez
	Group 4 – Landwasser 4	M Berlusconi, M Schenker
	Group 5 – Landwasser 5	C Fang, P Felicissimo
	Group 6 – Landwasser 6	D Forsh, J Lowe
	Group 7 – Landwasser 7	T Noda, P Schottel
	Group 8 – Landwasser 8	A Poichotte, A Al-Zubaidi
	Group 9 – Landwasser 9	M Abdalla, S Havik
	Group 10 – Landwasser 10	P Vergara, MR Popescu

15:55–16:15 Coffee break

16:15–17:50	Practical exercise 4 Fixation of a distal femoral fracture	A Al Belooshi, A Wajnsztein
	Fixation of a distal femoral fracture with the variable angle locking compression plate (VA-LCP) curved condylar plate	
	Table 1	M Berlusconi, G Fiorentini
	Table 2	M Alzahrani, A Jarragh
	Table 3	I Lantto, J Lowe
	Table 4	M Mocchi, M Schenker
	Table 5	MF Mak, A Smirnov
	Table 6	N Cohen, P Felicissimo
	Table 7	P Schottel, P Vergara
	Table 8	A Al-Zubaidi, A Poichotte
	Table 9	M Abdalla, S Havik
	Table 10	MR Popescu, T Noda

17:50–18:00 Evaluation

18:00–20:30 **AO Davos Courses Night**
Davos Congress Centre

Wednesday

December 4, 2024

LOCATION: Davos 1

08:00–08:05	Summary of day 2	T Large
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Module 3b

Moderator: C Olaya Gonzalez

Injuries of the tibia

Upon completion of this module, participants will be able to:

- Evaluate surgical principles and techniques for ORIF of high-energy tibial plateau fractures
 - Describe the decision-making process for the management of complex tibial shaft fractures
 - Prepare a preoperative plan including rationale for imaging, choice of approach, and surgical tactics for high-energy tibial pilon fractures
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08:05–08:15	Complex tibial plateau fractures	I Lantto
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08:15–08:25	Proximal, distal, and segmental tibial shaft fractures	A Al Belooshi
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08:25–08:35	Early and definitive treatment of pilon fractures	MF Mak
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08:35–09:05	Panel discussion	Moderator: C Olaya Gonzalez Panelists: I Lantto, A Al Belooshi, MF Mak
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09:05–09:10	Location change to practical exercise room	
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09:10–10:25	Practical exercise 5	D Forsh, I Lantto
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Management of a type 41C3 bicondylar tibial plateau fracture using a VA-LCP proximal tibial plate

Table 1

C Fang, C Olaya Gonzalez

Table 2

M Alzahrani, M Mocchi

Table 3

N Cohen, P Felicissimo

Table 4

G Fiorentini, A Jarragh

Table 5

M Schenker, A Smirnov

Table 6	J Lowe, A Wajnsztein
Table 7	A Poichotte, T Noda
Table 8	A Al-Zubaidi, P Vergara
Table 9	M Abdalla, P Schottel
Table 10	MR Popescu, S Havik

10:25–10:45 Coffee break and location change to The Shard

10:45–11:15 **SHARD session** T Large T Tosounidis
Prone posterolateral ankle exposure

11:15–11:20 Location change to lecture hall

Module 3c

Moderator: P Felicissimo

Ankle and foot injuries

Upon completion of this module, participants will be able to:

- Assess complex Type C malleolar fractures and plan appropriate treatment
- Discuss the current concepts for surgical management of talar neck fractures
- Discuss the current concepts for surgical management of intraarticular calcaneal fractures
- Discuss the current concepts for surgical management of Lisfranc injuries

11:20–11:35	Complex malleolar fractures	I Lantto
11:35–11:45	Talar neck fractures and complications	G Fiorentini
11:45–11:55	Calcaneal fractures—predicting and avoiding problems	P Felicissimo
11:55–12:05	Navicular and Lisfranc injuries and complications	MF Mak
12:05–12:25	Discussion and summary	P Felicissimo
12:25–13:30	Lunch break	

LOCATION: Davos 2

13:30–15:10 **Practical exercise 6** G Fiorentini, MF Mak
Management of distal tibial fractures
 Management of a 43C2.3 distal tibial fracture using an LCP distal tibia and an LCP one-third tubular plate

	Table 1	A Al Belooshi, G Della Rocca
	Table 2	C Fang, D Forsh
	Table 3	A Jarragh, C Olaya Gonzalez
	Table 4	M Schenker, A Smirnov
	Table 5	M Alzahrani, I Lantto
	Table 6	M Berlusconi, J Lowe
	Table 7	A Poichotte, MR Popescu
	Table 8	A Al-Zubaidi, P Schottel
	Table 9	P Vergara, T Noda
	Table 10	S Havik, M Abdalla
15:10–15:30	Coffee break and location change to discussion groups	
15:30–16:45	Small group discussion 4	
	Fractures of the tibia, ankle, and foot	
	Group 1 – Landwasser 1	M Alzahrani, D Forsh
	Group 2 – Landwasser 2	M Berlusconi, C Fang
	Group 3 – Landwasser 3	N Cohen, A Wajnsztein
	Group 4 – Landwasser 4	A Al Belooshi, C Olaya Gonzalez
	Group 5 – Landwasser 5	G Della Rocca, A Jarragh
	Group 6 – Landwasser 6	MF Mak, M Mocchi
	Group 7 – Landwasser 7	P Schottel, P Vergara
	Group 8 – Landwasser 8	A Al-Zubaidi, A Poichotte
	Group 9 – Landwasser 9	M Abdalla, S Havik
	Group 10 – Landwasser 10	MR Popescu, T Noda
16:45–16:55	Evaluation	

Thursday

December 5, 2024

LOCATION: Davos 2

08:00–09:35	Practical exercise 7	P Felicissimo, A Jarragh
	Multifragmentary fractures of the calcaneus	
	Open reduction and internal fixation of multifragmentary fractures of the calcaneus with the locking calcaneal plate	
	Table 1	A Al Belooshi, M Berlusconi
	Table 2	N Cohen, G Della Rocca
	Table 3	MF Mak, C Olaya Gonzalez
	Table 4	D Forsh, I Lantto
	Table 5	M Alzahrani, G Fiorentini
	Table 6	M Mocchi, A Smirnov
	Table 7	T Noda, P Vergara
	Table 8	A Al-Zubaidi, MR Popescu
	Table 9	P Schottel, A Poichotte
	Table 10	S Havik, M Abdalla

09:35–09:40 Location change to lecture room

09:40–09:45	Summary of day 3	T Large
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Module 4

Moderator: D Forsh

Polytrauma, pelvis, and acetabulum

Upon completion of this module, participants will be able to:

- Describe stabilization and treatment options for unstable pelvic ring injuries
- Set priorities for the management of the polytrauma patient
- Evaluate the decision for early total care versus damage control
- Recognize acetabular fracture patterns and describe principles of management

- List the key principles for mangled extremity decision making and management

09:45–10:00	Evaluation and emergency management of pelvic ring injuries	M Alzahrani
10:00–10:15	Management of multiple-injured patients (ETC/DCO/EAC)	J Lowe
10:15–10:25	Principles of acetabular fracture management	A Smirnov
10:25–10:35	Mangled extremity management	D Forsh
10:35–10:50	Summary and discussion	D Forsh
10:50–11:10	Coffee break and location change to discussion groups	
11:10–12:25	Small group discussion 5 Decision-making in difficult fractures and polytrauma patients	
	Group 1 – Landwasser 1	G Fiorentini, J Lowe
	Group 2 – Landwasser 2	A Smirnov, M Alzahrani
	Group 3 – Landwasser 3	N Cohen, A Jarragh
	Group 4 – Landwasser 4	I Lantto, M Schenker
	Group 5 – Landwasser 5	A Al Belooshi, C Fang
	Group 6 – Landwasser 6	M Mocchi, A Wajnsztein
	Group 7 – Landwasser 7	A Poichotte, T Noda
	Group 8 – Landwasser 8	A Al-Zubaidi, P Vergara
	Group 9 – Landwasser 9	M Abdalla, P Schottel
	Group 10 – Landwasser 10	MR Popescu, S Havik
12:25–13:55	Lunch break	

LOCATION: Davos 1

Module 5

Moderator: A Jarragh

Special situations and problems

Upon completion of this module, participants will be able to:

- Develop a treatment algorithm for malunion/deformity correction
- Recognize the reasons why fractures do not heal and the treatment options
- Identify why and how fractures become infected after osteosynthesis and the treatment principles
- List the key treatment principles for periprosthetic fractures
- Recognize how to stay out of trouble when doing an osteosynthesis
- Describe the relationship between frailty, aging, and increased risk of falls, and integrate the management principles for geriatric fractures

13:55–14:05	Management of malunion	N Cohen
14:05–14:15	Management of nonunion	A Wajnsztein
14:15–14:25	Infection after osteosynthesis	M Berlusconi
14:25–14:35	Periprosthetic fractures	M Alzahrani
14:35–14:45	Violation of principles	C Olaya Gonzalez
14:45–14:55	Principles of orthogeriatric fracture care (osteoporotic fractures)	G Della Rocca
14:55–15:10	Summary and discussion	A Jarragh
15:10–15:20	Summary of the course, evaluation, and take-home messages	T Large, T Tosounidis
15:20–15:30	Evaluation	
