



Orthopea 2021

ESPERIENZE DI REAL LIFE A CONFRONTO E DISCUSSIONE

DOTT MAZZA ANDREA

RESPONSABILE ANESTESIA CDAL POLICLINICO DI MONZA

BEACH CHAIR POSITION SHOULDER SURGERY



Preoperatorio

- ANAMNESI
- DOPPLER TSA?
- STUDIO CARDIO?
- VALUTAZIONI NEUROCOGNITIVE?
- PFR?


Intraoperatorio

Journal of Clinical Monitoring and Computing (2019) 33:615–625
<https://doi.org/10.1007/s10877-018-0211-7>

ORIGINAL RESEARCH



Cerebrovascular assessment of patients undergoing shoulder surgery in beach chair position using a multiparameter transcranial Doppler approach

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Abstract

Although the beach-chair position (BCP) is widely used during shoulder surgery, it has been reported to associate with a reduction in cerebral blood flow, oxygenation, and risk of brain ischaemia. We assessed cerebral haemodynamics using a multiparameter transcranial Doppler-derived approach in patients undergoing shoulder surgery. 23 anaesthetised patients (propofol (2 mg/kg)) without history of neurologic pathology undergoing elective shoulder surgery were included. Arterial blood pressure (ABP, monitored with a finger-cuff plethysmograph calibrated at the auditory meatus level) and cerebral blood flow velocity (FV, monitored in the middle cerebral artery) were recorded in supine and in BCP. All subjects underwent interscalene block ipsilateral to the side of FV measurement. We evaluated non-invasive intracranial pressure (nICP) and cerebral perfusion pressure (nCPP) calculated with a black-box mathematical model; critical closing pressure (CrCP); diastolic closing margin (DCM—pressure reserve available to avoid diastolic flow cessation); cerebral autoregulation index (Mxa); pulsatility index (PI). Significant changes occurred for DCM [mean decrease of 6.43 mm Hg ($p=0.01$)] and PI [mean increase of 0.11 ($p=0.05$)]. ABP, FV, nICP, nCPP and CrCP showed a decreasing trend. Cerebral autoregulation was dysfunctional ($Mxa > 0.3$) and PI deviated from normal ranges ($PI > 0.8$) in both phases. ABP and nCPP values were low (< 60 mm Hg) in both phases. Changes between phases did not result in CrCP reaching diastolic ABP, therefore DCM did not reach critical values (≤ 0 mm Hg). BCP resulted in significant cerebral haemodynamic changes. If left untreated, reduction in cerebral blood flow may result in brain ischaemia and post-operative neurologic deficit.

Keywords Beach chair position · Transcranial Doppler · Non-invasive intracranial pressure · Cerebral autoregulation

Intraoperatorio

Results: In this study, intraoperative cerebral desaturation occurred in 43% (18 of 42) of patients, and female sex was identified as an associated risk (odds ratio 4.3 [95% confidence interval 1.2 to 16.2]; $p = 0.03$). The median (interquartile range) duration of intraoperative cerebral desaturation was 19 minutes (5 to 38). There was no association between intraoperative cerebral desaturation and 24-hour postoperative cognitive decline (OR 0.6 [95% CI 0.1 to 2.4]; $p = 0.44$). Risk factors for intraoperative hypotension were a history of hypertension, regardless of whether or not the patient took antihypertensive drugs on the morning of surgery (OR 4.9 [95% CI 1.3 to 18.1]; $p = 0.02$), and dyslipidemia (OR 4.3 [95% CI 1.2 to 16.3]; $p = 0.03$).

Conclusion: The intraoperative cerebral desaturation risk in the beach chair position was high. Female sex was an intraoperative cerebral desaturation risk factor. However, there was no association between intraoperative cerebral desaturation and postoperative cognitive decline. Patients with hypertension and dyslipidemia are at risk of intraoperative hypotension after positioning. Further large-scale studies are required to identify intraoperative cerebral desaturation-associated adverse neurologic outcome.

Intraoperatorio

Neurological and neurobehavioral tests were performed prior and the day after surgery. The baseline data for near-infrared spectroscopy, bispectral index, cerebral blood flow, PaCO₂ and invasive blood pressure (radial artery) were taken prior anesthesia and after anesthesia induction, after beach chair positioning and all 20 min after surgery start until discharge of the patient.

Measurements

Neurological and neurobehavioral tests, cerebral saturation (rScO₂) using near-infrared spectroscopy, BIS, cerebral blood flow using Doppler of the middle cerebral artery (Vmax MCA), PaCO₂ and invasive blood pressure assessed at heart and at the external acoustic meatus level.

Main results

The incidence of cerebral desaturation events (CDEs) was 25%. The blood pressure drop 5 min after beach chair position measured at the acoustic meatus level in the CDE group was higher compared to patients without CDEs ($p=0.009$) as was the rScO₂ ($p=0.039$) and the Vmax MCA ($p=0.002$). There were no neurological deficits but patients with CDEs showed a greater negative impact on neurobehavioral tests 24 h after surgery compared to patients without CDEs ($p=0.001$).

Conclusions

In ASA I-II patients intravenous general anesthesia and controlled hypotension in the beach chair position affects cerebral blood flow and cerebral oxygenation with impact on the neurobehavioral outcome.



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Original Contribution

The beach chair position for shoulder surgery in intravenous general anesthesia and controlled hypotension: Impact on cerebral oxygenation, cerebral blood flow and neurobehavioral outcome

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Intraoperatorio

Background

The beach chair position is commonly used when performing shoulder arthroplasty. However, this position has been associated with hypotension, potentially leading to cerebral hypoperfusion, which may cause neurologic injury. In addition, shoulder arthroplasty cases are associated with longer operative times, posing a potentially greater risk of cerebral hypoperfusion. We aim to evaluate the risk of cerebral desaturation events (CDEs) during the course of total shoulder arthroplasty.

Methods

Twenty-six patients undergoing shoulder arthroplasties were monitored for changes in cerebral perfusion. Seven specific time-points during the procedure were labeled for comparison of events: baseline, beach chair, incision, humeral broaching, glenoid reaming, glenoid component implantation, and humeral component implantation. Cerebral oxygen perfusion was measured using near-infrared spectroscopy. A CDE was described as a decrease of oxygen saturation greater than 20%.

Results

Nineteen of 25 subjects experienced a CDE. 42% of these patients experienced CDEs during semi-beach chair positioning. Patients experienced the largest oxygen saturation drop during semi-beach chair positioning. Transition from baseline to semi-beach chair was the only event to have a statistically significant decrease in cerebral perfusion (8%, $P < .05$). There was a statistically significant percentage change in mean oxygen saturation in the semi-beach chair interval (10%, $P < .01$) and the semi-beach chair to incision interval (7%, $P < .01$).

Conclusions

Most patients experienced an intraoperative CDE, with greatest incidence during semi-beach chair positioning. The largest decline in cerebral oxygen saturation occurred during semi-beach chair positioning. Implant implantation was not associated with decrease in cerebral oximetry.

Cerebral Desaturation Events During Shoulder Arthroscopy in the Beach Chair Position

Abstract

The beach chair position (BCP) is commonly used position in upper extremity surgery. Although there are many advantages to surgery in this position, there are also potential drawbacks and described complications including devastating neurologic outcomes. The etiology of these complications is postulated to be due to the gravitational effects of the seated position leading to cerebral hypoperfusion. We review the current literature on intraoperative cerebral monitoring and neurocognitive complications with shoulder surgery performed in the BCP. A previous systematic review estimated the incidence of neurocognitive complications after surgery in the BCP to be 0.004%. However, the true incidence is unknown and is likely much more common. Reports of neurologic complications have revealed a need for heightened vigilance, alternative anesthesia techniques, and improved monitoring. Methods for monitoring have included near-infrared spectroscopy, a measurement of cerebral oximetry shown to reliably detect cerebral hypoperfusion. In this literature review, we sought to update the incidence of intraoperative cerebral desaturation events (CDEs) to investigate the relationship of CDEs to neurocognitive complications and to review recent reported cases of neurocognitive complications. Existing literature suggest that accurate intraoperative monitoring of cerebral perfusion may improve patient safety.

Intraoperatorio

Effect of beach chair position on bispectral index values during arthroscopic shoulder surgery

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In conclusion, our study suggests that changes in sitting position for arthroscopic shoulder surgery decreases BIS values in concert with MAP compared with the supine position. While not definitive, we may assume that these effects are due to reduced cerebral blood flow.

Intraoperatorio

- QUALE MONITORAGGIO?

ABP VS NIBP

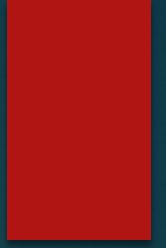
NIRS?

Postoperatorio

- MONITOR?
- BLOCCO INTERSCALENICO E PARAMETRI RESPIRATORI

COME COMPORTARSI? OPEN DISCUSSION

STOP

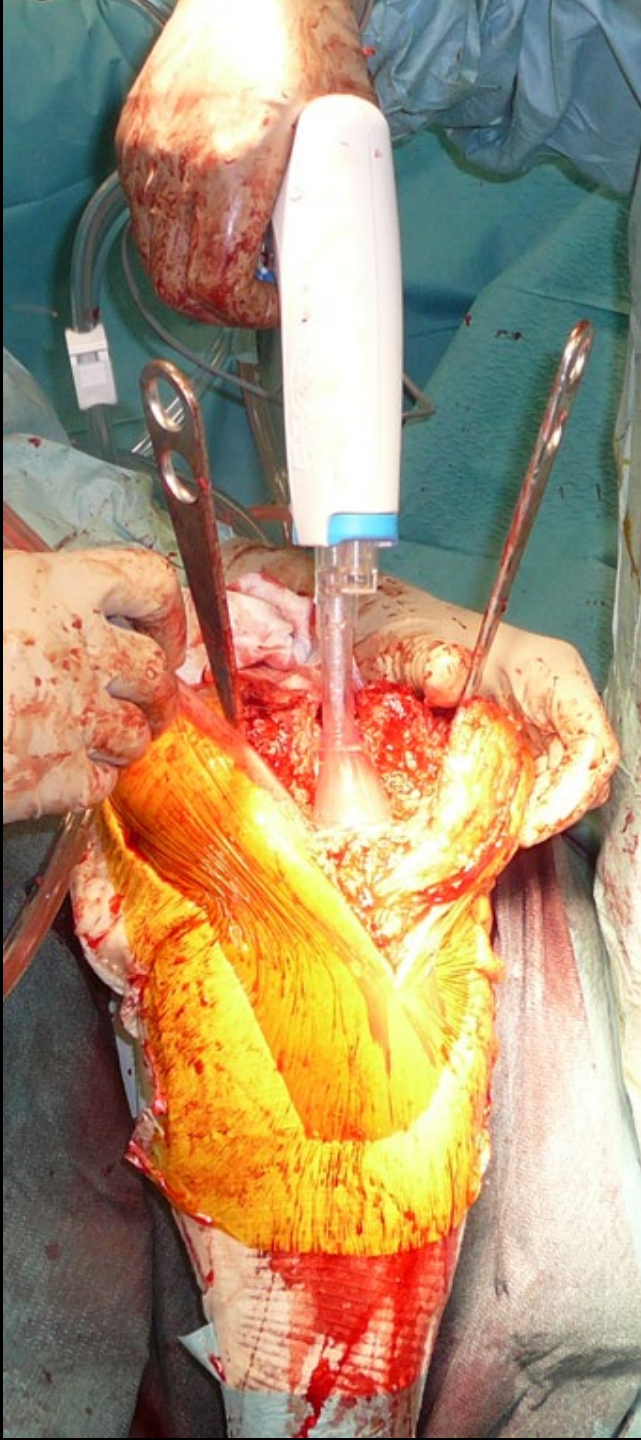


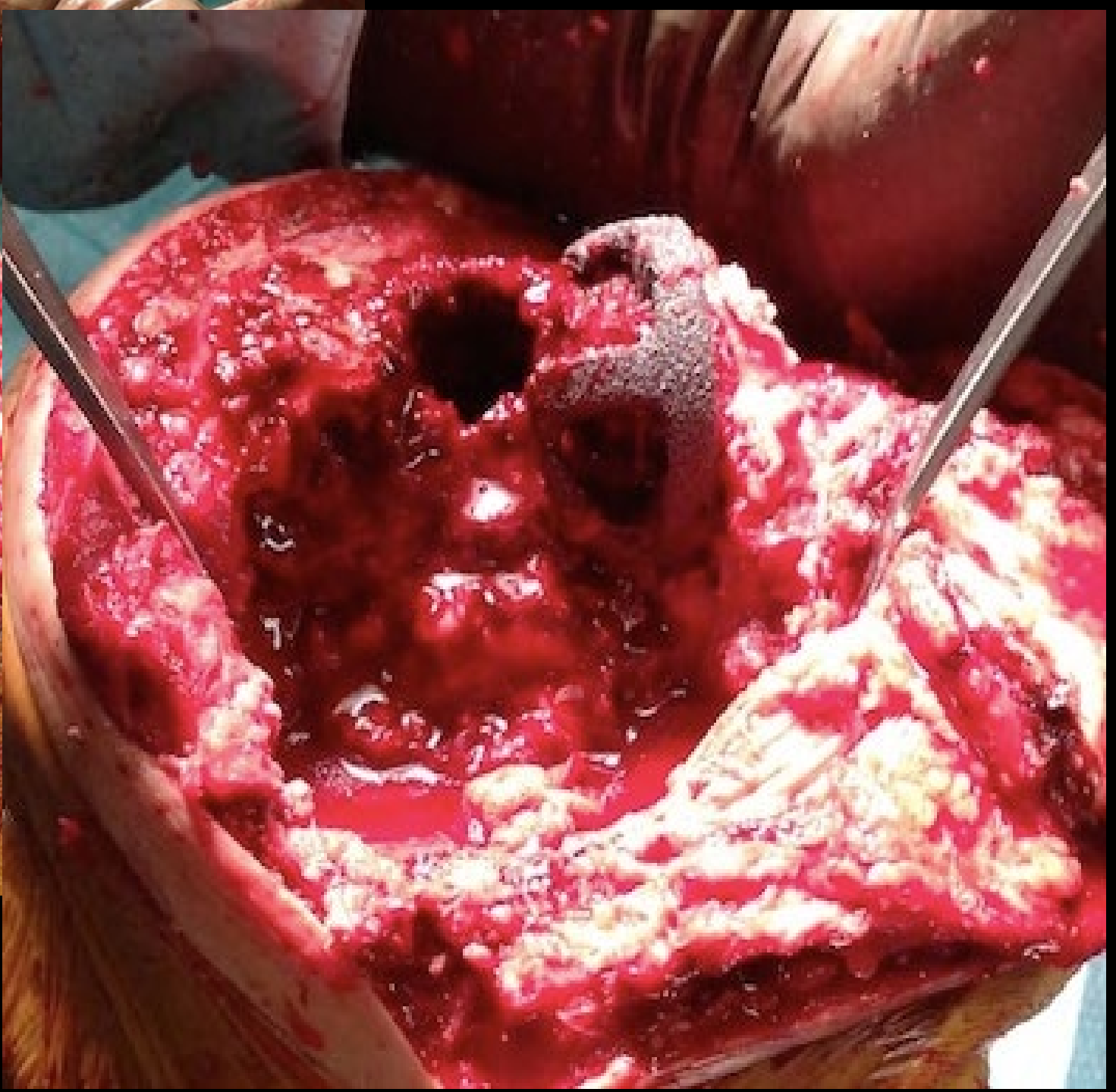
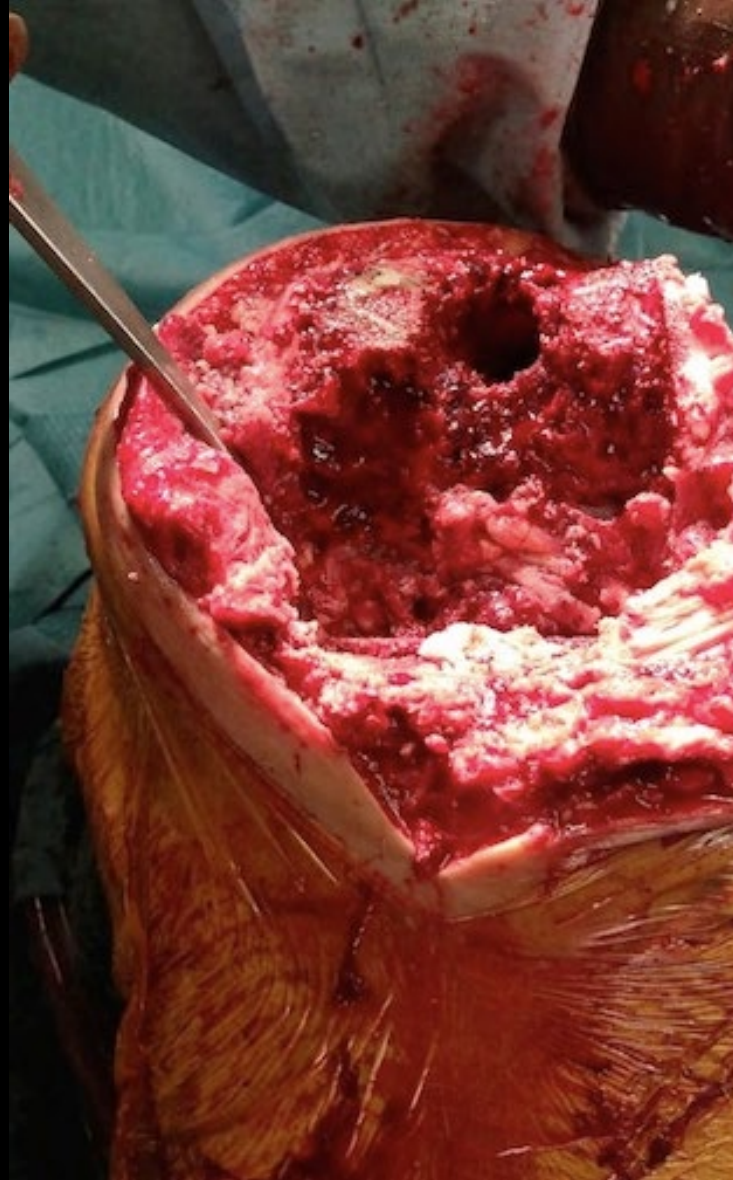
CHIRURGIA PROTESICA SETTICA E DI REVISIONE

- CHIRURGIA ORTOPEDICA MAGGIORE
- ELEVATO RISCHIO DI PERDITE EMATICHE
INTRAOPERATORIE
- PAZIENTI FRAGILI O SETTICI
- CHIRURGIA IN PIU' TEMPI
- POSTOPERATORIO COMPLICATO
- RISCHIO TVP E EP

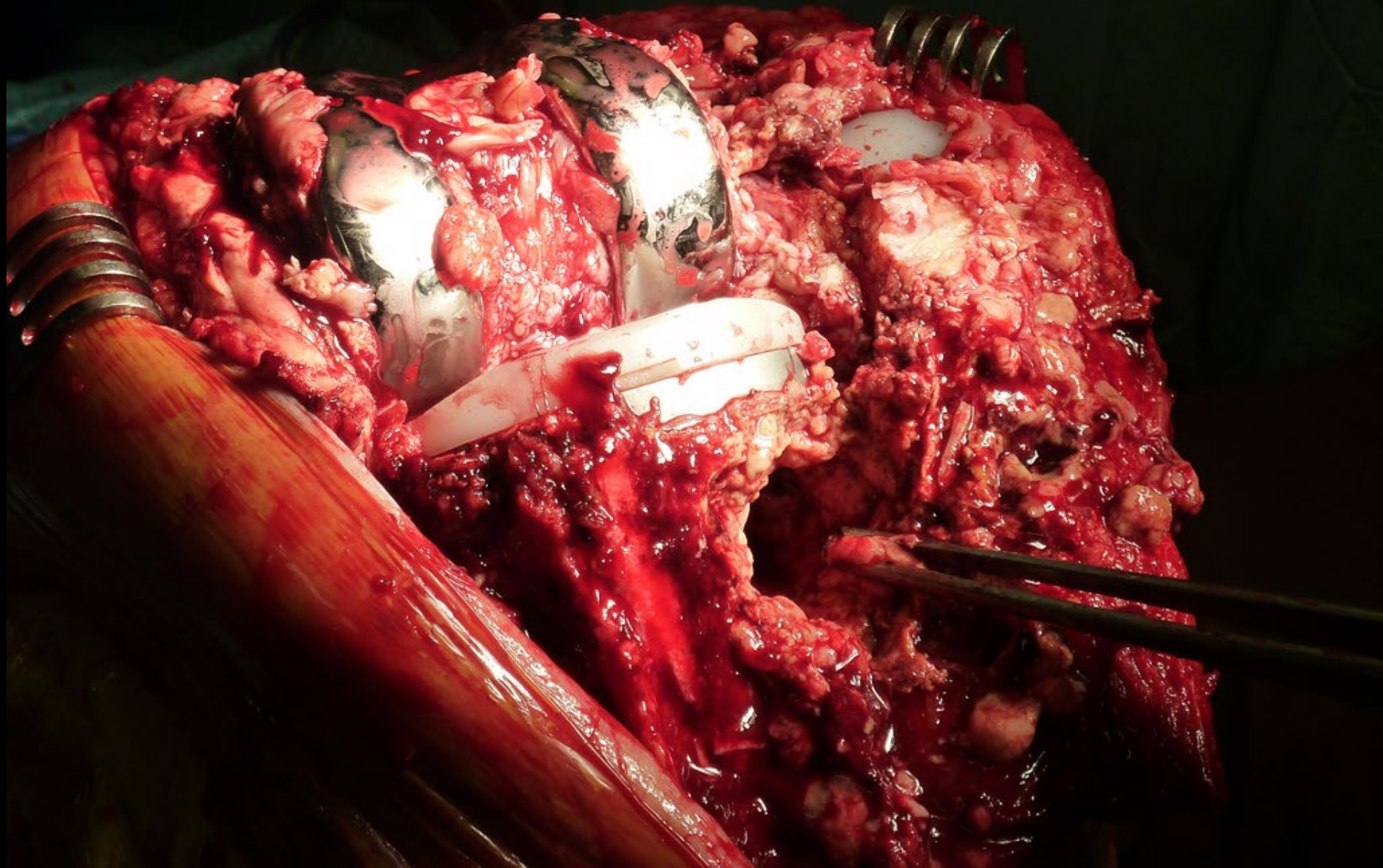
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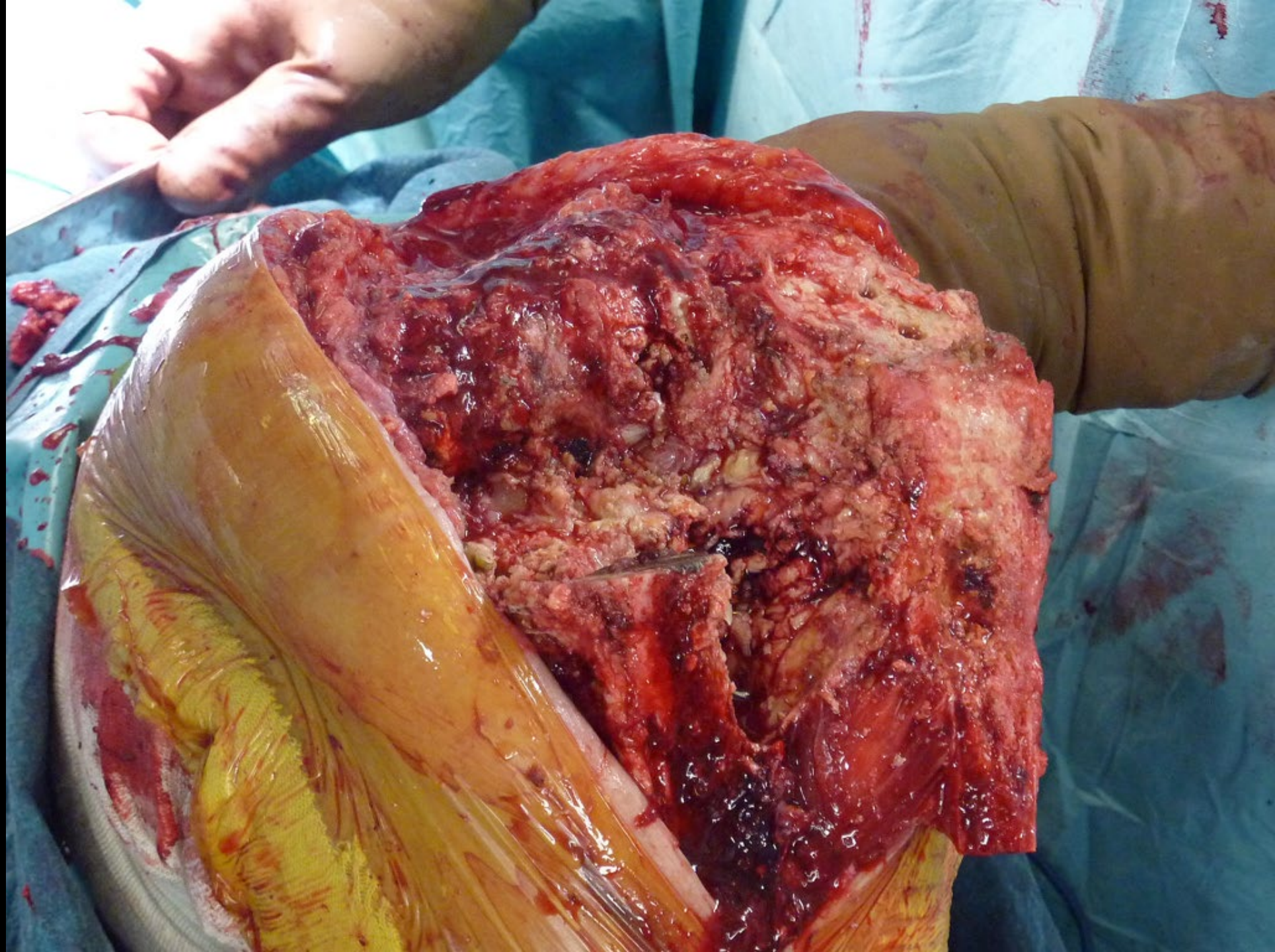












Preparazione paziente

- SPESSO DIFFICILE DA ORGANIZZARE
- NO PREHABILITATION
- PAZIENTI DEBILITATI
- IMMOBILIZZAZIONE
- ANEMIA
- SEPSI
- COMORBIDITA'

QUALE ANESTESIA?

BJA

British Journal of Anaesthesia, 123 (3): 269–287 (2019)

doi: 10.1016/j.bja.2019.05.042

Advance Access Publication Date: 24 July 2019

Review Article

CLINICAL PRACTICE

Anaesthetic care of patients undergoing primary hip and knee arthroplasty: consensus recommendations from the International Consensus on Anaesthesia-Related Outcomes after Surgery group (ICAROS) based on a systematic review and meta-analysis

Results: The analysis of 94 studies revealed that neuraxial anaesthesia was associated with lower odds or no difference in virtually all reported complications, except for urinary retention. Excerpt of complications for neuraxial vs general anaesthesia in hip/knee arthroplasty, respectively: mortality odds ratio (OR): 0.67, 95% confidence interval (CI): 0.57–0.80/OR: 0.83, 95% CI: 0.60–1.15; pulmonary OR: 0.65, 95% CI: 0.52–0.80/OR: 0.69, 95% CI: 0.58–0.81; acute renal failure OR: 0.69, 95% CI: 0.59–0.81/OR: 0.73, 95% CI: 0.65–0.82; deep venous thrombosis OR: 0.52, 95% CI: 0.42–0.65/OR: 0.77, 95% CI: 0.64–0.93; infections OR: 0.73, 95% CI: 0.67–0.79/OR: 0.80, 95% CI: 0.76–0.85; and blood transfusion OR: 0.85, 95% CI: 0.82–0.89/OR: 0.84, 95% CI: 0.82–0.87.

Conclusions: Recommendation: primary neuraxial anaesthesia is preferred for knee arthroplasty, given several positive postoperative outcome benefits; evidence level: low, weak recommendation. Recommendation: neuraxial anaesthesia is recommended for hip arthroplasty given associated outcome benefits; evidence level: moderate-low, strong recommendation. Based on current evidence, the consensus group recommends neuraxial over general anaesthesia for hip/knee arthroplasty.

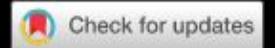
QUALE ANESTESIA?

REVISION ARTHROPLASTY | VOLUME 34, ISSUE 7, P1417-1422, JULY 01, 2019

General vs Spinal Anesthesia for Revision Total Knee Arthroplasty: Do Complication Rates Differ?

Jacob M. Wilson, MD  • Kevin X. Farley, BA • Greg A. Erens, MD • George N. Guild III, MD

Published: March 28, 2019 • DOI: <https://doi.org/10.1016/j.arth.2019.03.048> •



Results: Patients undergoing revision TKA with general anesthesia had increased risk of several postoperative complications, even after controlling for baseline patient characteristics. Specifically, there were significantly increased rates of the following: unplanned readmission (OR = 1.43, 95% confidence interval [CI] = 1.18-1.72, $P < .001$), nonhome discharge (OR = 1.60, 95% CI = 1.46-1.76, $P < .001$), transfusion (OR = 1.63, 95% CI = 1.41-1.88, $P < .001$), deep surgical site infection (OR = 1.43, 95% CI = 1.01-2.03, $P = .043$), and extended length of stay (OR = 1.22, 95% CI = 1.11-1.34, $P < .001$). General anesthesia was additionally associated with increased operative time.

Conclusion: General anesthesia is associated with increased risk of numerous postoperative complications in patients undergoing revision TKA. This study is retrospective in nature, and while causality cannot be definitively determined, the results suggest that spinal anesthesia is preferential to general anesthesia in the revision TKA patient.

QUALE ANESTESIA?

- ANESTESIA SPINALE
 - ANESTESIA COMBINATA SPINO EPIDURALE
 - ANESTESIA GENERALE
-
- DURATA INTERVENTO
 - ALTERAZIONI EMOCROMO/COAGULAZIONE

QUALE MONITORAGGIO INTRAOPERATORIO

QUALE MONITORAGGIO EMODINAMICO

- SPESSO «SITUAZIONE CHIRURGICA INATTESA»

MAI SOTTOVALUTARE

INTRAOPERATORIO

STANDARD DI LAVORO ATTUALE
SINERGIA CON IL CHIRURGO
CORRETTA VALUTAZIONE DEL PAZIENTE

OPEN DISCUSSION

QUALE MONITORAGGIO POSTOPERATORIO

- REPARTO VS ALTA INTENSITA'
- ORGANIZZAZIONE CENTRATA SUL CHIRURGO
- ORGANIZZAZIONE CENTRATA
SULL'INFETTIVOLOGO

SINERGIE E ORGANIZZAZIONE

FORMAZIONE SPECIFICA DEL PERSONALE

GRAZIE PER L'ATTENZIONE



