

**Supplemental Table: List of Excluded Studies**

<b>Covidence #</b>	<b>Study</b>	<b>Title</b>	<b>Authors</b>	<b>Journal</b>	<b>Reason for Exclusion</b>
#10	Zarchi 2022	A practical method for real-time detection of pedicle wall breaching during funneling	Zarchi O.; Ohana N.; Mercado E.; Amitai A.; Berestizshevsky Y.; Sheinis D.; Benharroch D.; Bar-On E.	Archives of Orthopaedic and Trauma Surgery	Wrong Outcome
#15	Puvanesarajah 2022	The deformity angular ratio: can three-dimensional computed tomography improve prediction of intraoperative neuromonitoring events?	Puvanesarajah V.; Marciano G.F.; Hassan F.M.; Lee N.J.; Thuet E.D.; Lombardi J.M.; Sardar Z.M.; Lehman R.A.; Lenke L.G.	Spine Deformity	Wrong Outcome
#46	Jamaludin 2022	Machine Learning Application of Transcranial Motor-Evoked Potential to Predict Positive Functional Outcomes of Patients	Jamaludin M.R.; Lai K.W.; Chuah J.H.; Zaki M.A.; Hasikin K.; Abd Razak N.A.; Dhanalakshmi S.; Saw L.B.; Wu X.	Computational intelligence and neuroscience	Wrong Outcome
#57	Montes 2022	Pulse-train versus single-pulse t-EMG stimulation for intraoperative neurophysiologic monitoring	Montes E.; de Blas G.; Barrios C.; Mariscal G.; Burgos J.; Regidor I.; Hevia E.	Clinical Neurology and Neurosurgery	Wrong Outcome

		of thoracic pedicle screws in adolescent idiopathic scoliosis			
#72	BeaulieuLalanne 2022	Triggered electromyography (tEMG) in the lumbar spine Its reliable? Correlation of tEMG with postoperative CT images in lumbar instrumentation	Beaulieu Lalanne L.; Larrondo Carmona R.; Alvarez Lemos F.; Oelker Behn C.; Caceres Copetta M.; Munoz Wilson J.T.; Beaulieu Montoya A.M.; Larrondo Martinez V.	Revista espanola de cirugia ortopedica y traumatologia	Full Text Not in English
#78	Shao 2021	Efficacy and safety for combination of t-EMG with O-arm assisted pedicle screw placement in neurofibromatosis type I scoliosis surgery	Shao X.; Huang Z.; Deng Y.; Yang J.; Sui W.	Journal of orthopaedic surgery and research	Wrong Outcome
#83	Chang 2021	Diagnostic accuracy of ssep changes during lumbar spine surgery for predicting postoperative neurological deficit: A systematic review and meta-analysis	Chang R.; Reddy R.P.; Coutinho D.V.; Chang Y.-F.; Anetakis K.M.; Crammond D.J.; Balzer J.R.; Thirumala P.D.	Spine	Wrong Study Design

#99	Hiyama 2022	Utility of Power Tool and Intraoperative Neuromonitoring for Percutaneous Pedicle Screw Placement in Single Position Surgery: A Technical Note	Hiyama A.; Nomura S.; Sakai D.; Watanabe M.	World Neurosurgery	Wrong Intervention
#116	Zheng 2021	Preoperative electrophysiologic assessment of C5-innervated muscles in predicting C5 palsy after posterior cervical decompression	Zheng C.; Nie C.; Zhu Y.; Xu M.; Lyu F.; Jiang J.; Xia X.	European Spine Journal	Wrong Patient Population
#177	Wu 2020	Application of different thresholds for instrumentation device testing in minimally invasive lumbosacral spine fixation	Wu Y.; Cohen D.; Tellez M.J.; DiGiacinto G.V.; Barquero A.V.; Ulkatan S.	Journal of Clinical Neuroscience	Wrong Outcome
#183	Jasiukaitis 2020	Trending algorithm discriminates hemodynamic from injury related TcMEP amplitude loss	Jasiukaitis P.; Lyon R.	Journal of Clinical Monitoring and Computing	Wrong Outcome

#203	Ravindra 2019	Electromyography stimulation compared with intraoperative O-arm imaging for evaluating pedicle screw breaches in lumbar spine surgery: a prospective analysis of 1006 screws in 164 patients	Ravindra V.M.; Kalra R.R.; Dailey A.T.	Spine Journal	Wrong Outcome
#250	Zakaria 2018	Mechanomyography for Intraoperative Assessment of Cortical Breach During Instrumented Spine Surgery	Zakaria H.M.; Tundo K.M.; Sandles C.; Chuang M.; Schultz L.; Aho T.; Abdulkhak M.	World Neurosurgery	Wrong Intervention
#266	Zheng 2017	Screw Placement at the Apex Alters Surgical Outcomes of Moderate Lenke 1 Adolescent Idiopathic Scoliosis	Zheng X.; Qian B.-P.; Liu Z.; Sun X.; Zhu Z.-Z.; Wang B.; Yu Y.; Qiu Y.	Clinical Spine Surgery	Wrong Outcome
#267	Kaliya-Perumal 2017	Intraoperative electromyographic monitoring to optimize safe lumbar pedicle screw placement - a retrospective analysis	Kaliya-Perumal A.-K.; Charng J.-R.; Niu C.-C.; Tsai T.-T.; Lai P.-L.; Chen L.-H.; Chen W.-J.	BMC Musculoskeletal Disorders	Wrong Intervention

#270	Ajiboye 2017	Utility of Intraoperative Neuromonitoring for Lumbar Pedicle Screw Placement Is Questionable	Ajiboye R.M.; Zoller S.D.; D'Oro A.; Burke Z.D.; Sheppard W.; Wang C.; Buser Z.; Wang J.C.; Pourtaheri S.	Spine	Wrong Outcome
#299	Kassis 2016	Combining pedicle screw stimulation with spinal navigation, a protocol to maximize the safety of neural elements and minimize radiation exposure in thoracolumbar spine instrumentation	Kassis S.Z.; Abukwedat L.K.; Msaddi A.K.; Majer C.N.; Othman W.	European Spine Journal	Wrong Outcome
#320	Thirumala 2016	Diagnostic accuracy of combined multimodality somatosensory evoked potential and transcranial motor evoked potential intraoperative monitoring in patients with idiopathic scoliosis	Thirumala P.D.; Huang J.; Thiagarajan K.; Cheng H.; Balzer J.; Crammond D.J.	Spine	Wrong Study Design

#365	Wood 2014	The surgical learning curve and accuracy of minimally invasive lumbar pedicle screw placement using CT based computer-assisted navigation plus continuous electromyography monitoring - A retrospective review of 627 screws in 150 patients	Wood M.J.; McMillen J.	International Journal of Spine Surgery	Wrong Outcome
#377	Azabou 2014	Predicting intraoperative feasibility of combined TES-mMEP and cSSEP monitoring during scoliosis surgery based on preoperative neurophysiological assessment	Azabou E.; Manel V.; Abelin-Genevois K.; Andre-Obadia N.; Cunin V.; Garin C.; Kohler R.; Berard J.; Ulkatan S.	Spine Journal	Wrong Outcome
#393	Calancie 2014	Implantation of thoracic pedicle screws: A blinded and randomized clinical study. Part 1. Methods and alarm criteria Clinical article	Calancie B.; Donohue M.L.; Harris C.B.; Canute G.W.; Singla A.; Wilcoxon K.G.; Moquin R.R.	Journal of Neurosurgery: Spine	Wrong Outcome

#394	Calancie 2014	Neuromonitoring with pulse-train stimulation for implantation of thoracic pedicle screws: a blinded and randomized clinical study. Part 1. Methods and alarm criteria	Calancie B.; Donohue M.L.; Harris C.B.; Canute G.W.; Singla A.; Wilcoxon K.G.; Moquin R.R.	Journal of neurosurgery. Spine	Wrong Outcome
#397	Kulik 2013	A CT-based study investigating the relationship between pedicle screw placement and stimulation threshold of compound muscle action potentials measured by intraoperative neurophysiological monitoring	Kulik G.; Pralong E.; McManus J.; Debatisse D.; Schizas C.	European Spine Journal	Wrong Outcome
#412	Ney 2013	Cost-benefit analysis: Intraoperative neurophysiological monitoring in spinal surgeries	Ney J.P.; Van Der Goes D.N.; Watanabe J.H.	Journal of Clinical Neurophysiology	Wrong Study Design
#422	Fotakopoulos 2013	The value of transcranial motor-evoked potentials and free-running electromyography in surgery for cervical disc herniation	Fotakopoulos G.; Alexiou G.A.; Pachatouridis D.; Karagiorgiadis D.; Konitsiotis S.; Kyritsis A.P.; Voulgaris S.	Journal of Clinical Neuroscience	Wrong Outcome

#429	Gazzeri 2013	Safety of intraoperative electrophysiological monitoring (TES and EMG) for spinal and cranial lesions	Gazzeri R.; Faiola A.; Neroni M.; Fiore C.; Callovini G.; Pischedda M.; Galarza M.	Surgical technology international	Full Text not available
#431	Hwang 2012	Intraoperative Neurophysiological Monitoring in Spine Deformity Surgery	Hwang S.W.; Malhotra N.R.; Shaffrey C.I.; Samdani A.F.	Spine Deformity	Wrong Study Design
#441	Feng 2012	Minimally invasive transforaminal lumbar interbody fusion aided with computer-assisted spinal navigation system combined with electromyography monitoring	Feng L.; Wei L.; Fan Z.; Tie L.; Du X.-L.; Chen A.-M.	Chinese Medical Journal	Wrong Outcome
#458	Parker 2011	Ability of electromyographic monitoring to determine the presence of malpositioned pedicle screws in the lumbosacral spine: Analysis of 2450 consecutively placed screws - Clinical article	Parker S.L.; Amin A.G.; Farber S.H.; McGirt M.J.; Sciubba D.M.; Wolinsky J.-P.; Bydon A.; Gokaslan Z.L.; Witham T.F.	Journal of Neurosurgery: Spine	Wrong Outcome



#464	Haghighi 2011	Correlation between transcranial motor and somatosensory-evoked potential findings in cervical myelopathy or radiculopathy during cervical spine surgery	Haghighi S.S.; Mundis G.; Zhang R.; Ramirez B.	Neurological Research	Wrong Outcome
#469	Gavaret 2011	Intraoperative monitoring in pediatric orthopedic spinal surgery: Three hundred consecutive monitoring cases of which 10% of patients were younger than 4 years of age	Gavaret M.; Trebuchon A.; Aubert S.; Jacopin S.; Blondel B.; Glard Y.; Jouve J.-L.; Bollini G.	Spine	Paediatric population
#473	Mavrogenis 2009	Accuracy of pedicle screw placement using intraoperative neurophysiological monitoring and computed tomography	Mavrogenis A.F.; Papagelopoulos P.J.; Korres D.S.; Papadopoulos K.; Sakas D.E.; Pneumaticos S.	Journal of Long-Term Effects of Medical Implants	Wrong Outcome
#474	Alemo 2010	Role of intraoperative neurophysiologic monitoring in lumbosacral spine fusion and instrumentation: A retrospective study	Alemo S.; Sayadipour A.	World Neurosurgery	Wrong Outcome

#481	Samdani 2010	Learning curve for placement of thoracic pedicle screws in the deformed spine	Samdani A.F.; Ranade A.; Saldanha V.; Yondorf M.Z.	Neurosurgery	Wrong Outcome
#490	Yamamoto 2010	Efficacy and limitations of intraoperative spinal cord monitoring using nasopharyngeal tube electrodes	Yamamoto N.; Kobashi H.; Shiba M.; Itoh T.	Journal of Neurosurgery: Spine	Wrong Intervention
#505	Hu 2007	Time-frequency feature of intraoperative somatosensory evoked potential signals	Hu Y.; Jiang F.; Luk K.D.	Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Conference	Wrong Study Design
#522	Kim 2008	Free-hand pedicle screw placement during revision spinal surgery: Analysis of 552 screws	Kim Y.-W.; Lenke L.G.; Kim Y.J.; Bridwell K.H.; Kim Y.B.; Watanabe K.	Spine	Wrong Outcome

#527	Rodriguez-Olaverri 2008	Using triggered electromyographic threshold in the intercostal muscles to evaluate the accuracy of upper thoracic pedicle screw placement (T3-T6)	Rodriguez-Olaverri J.C.; Zimick N.C.; Merola A.; De Blas G.; Burgos J.; Piza-Vallespir G.; Hevia E.; Vicente J.; Sanper I.; Domenech P.; Regidor I.	Spine	Wrong Outcome
#547	Djurasovic 2005	A prospective analysis of intraoperative electromyographic monitoring of posterior cervical screw fixation	Djurasovic M.; Dimar 2nd. J.R.; Glassman S.D.; Edmonds H.L.; Carreon L.Y.	Journal of spinal disorders & techniques	Wrong Outcome
#552	Huitema 2006	Screw position after double-rod anterior spinal fusion in idiopathic scoliosis: An evaluation using computerized tomography	Huitema G.C.; Van Rhijn L.W.; Van Ooij A.	Spine	Wrong Intervention
#600	MacDonald 2003	Monitoring scoliosis surgery with combined multiple pulse transcranial electric motor and cortical somatosensory-evoked potentials from the lower and upper extremities	MacDonald D.B.; Al Zayed Z.; Khoudeir I.; Stigsby B.	Spine	Wrong Outcome

#611	Kobara 2000	Relative effectiveness of electrically- vs mechanically- elicited EMGs in detecting pedicle wall perforation and surgically-induced nerve root damage	Kobara N.; Owen J.H.; Kostuik J.; Huckell C.; Tooke S.M.	Fukuoka igaku zasshi = Hukuoka acta medica	Wrong Outcome
#613	Akay 2002	Continuous neural monitoring in lumbar spine surgery: Experience with 101 patients	Akay K.M.; Onder S.	Minimally Invasive Neurosurgery	Wrong Outcome
#621	Zileli 2002	Diagnostic value of electrical stimulation of lumbosacral roots in lumbar spinal stenosis	Zileli B.; Ertekin C.; Zileli M.; Yunten N.	Acta Neurologica Scandinavica	Wrong Patient Population
#625	Pereon 2002	Combined spinal cord monitoring using neurogenic mixed evoked potentials and collision techniques	Pereon Y.; Nguyen The Tich S.; Delecrin J.; Pham Dang C.; Bodin J.; Drouet J.-C.; Passuti N.	Spine	Wrong Outcome
#627	Reidy 2001	Evaluation of electromyographic monitoring during insertion of thoracic pedicle screws	Reidy D.P.; Houlden D.; Nolan P.C.; Kim M.; Finkelstein J.A.	Journal of Bone and Joint Surgery - Series B	Wrong Outcome

#631	Hu 2001	Comparison of time-frequency distribution techniques for analysis of spinal somatosensory evoked potential	Hu Y.; Luk K.D.K.; Lu W.W.; Holmes A.; Leong J.C.Y.	Medical and Biological Engineering and Computing	Wrong Outcome
#637	Bosnjak 2000	Electrical thresholds for biomechanical response in the ankle to direct stimulation of spinal roots L4, L5, and S1: Implications for intraoperative pedicle screw testing	Bosnjak R.; Dolenc V.V.	Spine	Wrong Intervention
#639	Schwartz 2000	Prevention of positional brachial plexopathy during surgical correction of scoliosis	Schwartz D.M.; Drummond D.S.; Hahn M.; Ecker M.L.; Dormans J.P.	Journal of Spinal Disorders	Wrong Outcome
#648	Luk 1999	Variability of somatosensory-evoked potentials in different stages of scoliosis surgery	Luk K.D.K.; Hu Y.; Wong Y.W.; Leong J.C.Y.	Spine	Wrong Outcome
#662	Lang 1996	Myogenic motor-evoked potential monitoring using partial neuromuscular blockade in surgery of the spine	Lang E.W.; Beutler A.S.; Chesnut R.M.; Patel P.M.; Kennelly N.A.; Kalkman C.J.; Drummond J.C.; Garfin S.R.	Spine	Wrong Outcome

#666	Nagle 1996	Intraoperative monitoring of motor evoked potentials: A review of 116 cases	Nagle K.J.; Emerson R.G.; Adams D.C.; Heyer E.J.; Roye D.P.; Schwab F.J.; Weidenbaum M.; McCormick P.; Pile-Spellman J.; Stein B.M.; Farcy J.P.; Gallo E.J.; Dowling K.C.; Turner C.A.	Neurology	Wrong Outcome
#670	Epstein 1996	Somatosensory evoked potential monitoring (SSEPs) in 173 cervical operations	Epstein N.E.	Neuro-Orthopedics	Wrong Outcome
#672	Clements 1996	Evoked and spontaneous electromyography to evaluate lumbosacral pedicle screw placement	Clements D.H.; Morledge D.E.; Martin W.H.; Betz R.R.	Spine	Wrong Outcome
#690	Friedman 1987	Somatosensory evoked potentials after sequential extremity stimulation: A new method for improved monitoring accuracy	Friedman W.A.; Curran M.T.	Neurosurgery	Wrong Outcome
#692	Mostegl 1984	The application of somatosensory-evoked potentials in orthopedic spine surgery	Mostegl A.; Bauer R.	Archives of Orthopaedic and Traumatic Surgery	Wrong Outcome

#724	DiMaria 2022	Patient Factors Impacting Baseline Motor Evoked Potentials (MEPs) in Patients Undergoing Cervical Spine Surgery for Myelopathy or Radiculopathy.	DiMaria, Stephen; Wilent, W.; Nicholson, Kristen; Tesdahl, Eric; Valiuskyte, Kornelija; Mao, Jennifer; Seger, Philip; Singh, Akash; Sestokas, Anthony; Vaccaro, Alex; MD, PhD		Wrong Outcome
#726	Li 2022	Safe Electromyography Stimulation Thresholds Within Kambin's Triangle During Endoscopic Transforaminal Lumbar Interbody Fusion.	Li, Yingda; Wang, Michael		Wrong Outcome
#781	Kiridly 2021	Positioning-Related Peripheral Nerve Injury During Spine Surgery and the Role of Intraoperative Neuromonitoring.	Kiridly, Daniel; MD, MBA; Satin, Alexander; Derman, Peter; MD, MBA		Wrong Study Design

#787	Kobayashi 2021	<p>Characteristics of Cases with Poor Transcranial Motor-evoked Potentials Baseline Waveform Derivation in Spine Surgery: A Prospective Multicenter Study of the Monitoring Committee of the Japanese Society for Spine Surgery and Related Research.</p>	<p>Kobayashi, Kazuyoshi;          Imagama, Shiro; Ando, Kei;          Yoshida, Go; Ando, Muneharu;          Kawabata, Shigenori; Yamada, Kei; Kanchiku, Tsukasa;          Fujiwara, Yasushi; Taniguchi, Shinichirou; Iwasaki, Hiroshi;          Shigematsu, Hideki; Tadokoro, Nobuaki; Takahashi, Masahito;          Wada, Kanichiro; Yamamoto, Naoya; Funaba, Masahiro;          Yasuda, Akimasa; Ushirozako, Hiroki; Hashimoto, Jun; Morito, Shinji; Takatani, Nobunori;          Tani, Toshikazu; Matsuyama, Yukihiro</p>		Wrong Outcome
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#797	Liu 2021	The Prognostic Value of Intraoperative Neuromonitoring by Combining Somatosensory- and Motor-Evoked Potentials for Thoracic Spinal Decompression Surgery in Patients with Neurological Deficit.	Liu, Tun; Dong, Buhuai; Qi, Huaguang; Yan, Liang; MD, PhD; Zhao, Songchuan; Liu, Zhian; Liu, Xuemei; Wang, Fei; Li, Liang; Cai, Wenbo; Luo, Zhenguo; Wang, Gang		Wrong Outcome
#799	Zheng 2021	Comparison of Intraoperative Neuromonitoring Outcome in Treating Thoracic Ossification of the Ligamentum Flavum Through En Bloc Versus Piecemeal Laminectomy.	Zheng, Chaojun; Nie, Cong; Zhu, Yu; Tang, Susu; Jin, Xiang; Lyu, Feizhou; Jiang, Jianyuan; Ma, Xiaosheng		Wrong Outcome
#807	Zhang 2021	Multi-modal Neuroelectrophysiological Monitoring in the Treatment of Thoracic Tuberculosis with Debridement and Bone Grafting and Posterior Pedicle Screw Fixation via Costal Transverse Process Approach.	Zhang, Chen-wei; Shi, Shi-yuan; Tao, Xiao; Hu, Jin-ping; Cao, Tian-yi; Fei, Jun		Wrong Outcome

#816	Tanaka 2021	Effect of Compound Muscle Action Potential After Peripheral Nerve Stimulation Normalization on Anesthetic Fade of Intraoperative Transcranial Motor-Evoked Potential.	Tanaka, Satoshi; Watanabe, Tomoko; Takanashi, Junko; Oka, Hidehiro; Hashimoto, Ryo; Akimoto, Jiro		Wrong Patient Population
#836	Modi 2021	Clinical Correlation of Intraoperative Neuromonitoring in 319 Individuals Undergoing Posterior Decompression and Fixation of Spine.	Modi, Hitesh; MD, MS; Goel, Shakti; Desai, Yatin; Modi, Poonam		Wrong Outcome
#851	Toll 2021	Congenital Scoliosis of the Pediatric Cervical Spine: Characterization of a 17-Patient Operative Cohort.	Toll, Brandon; Samdani, Amer; Amanullah, Amir; Pahys, Joshua; Janjua, Muhammad; Hwang, Steven		Wrong Outcome
#856	Magampa 2021	Surgeon-directed transcranial motor evoked potential spinal cord monitoring in spinal deformity surgery: A REVIEW OF VIABILITY, SAFETY, AND EFFICACY.	Magampa, R.; Dunn, R.		Wrong Outcome

<p>#859</p>	<p>Kobayashi 2021</p>	<p>Efficacy of Intraoperative Intervention Following Transcranial Motor-evoked Potentials Alert During Posterior Decompression and Fusion Surgery for Thoracic Ossification of the Posterior Longitudinal Ligament: A Prospective Multicenter Study of the Monitor</p>	<p>Kobayashi, Kazuyoshi; MD, PhD; Imagama, Shiro; Yoshida, Go; Ando, Muneharu; Kawabata, Shigenori; Yamada, Kei; Kanchiku, Tsukasa; Fujiwara, Yasushi; Taniguchi, Shinichirou; Iwasaki, Hiroshi; Tadokoro, Nobuaki; Takahashi, Masahito; Wada, Kanichiro; Yamamoto, Naoya; Shigematsu, Hideki; Funaba, Masahiro; Yasuda, Akimasa; Ushirozako, Hiroki; Tani, Toshikazu; Matsuyama, Yukihiro</p>		<p>Wrong Outcome</p>
<p>#965</p>	<p>Tanaka 2019</p>	<p>Muscle-evoked Potentials After Electrical Stimulation to the Brain in Patients Undergoing Spinal Surgery are Less Affected by Anesthetic Fade With Constant-voltage Stimulation Than With Constant-current Stimulation.</p>	<p>Tanaka, Masato; Shigematsu, Hideki; MD, PhD; Kawaguchi, Masahiko; Hayashi, Hironobu; Takatani, Tsunenori; MT, PhD; Iwata, Eiichiro; Okuda, Akinori; Morimoto, Yasuhiko; Kawasaki, Sachiko; Masuda, Keisuke; Yamamoto, Yusuke; Tanaka, Yasuhito</p>		<p>Wrong Outcome</p>

#978	Wang 2019	Survivals of the Intraoperative Motor-evoked Potentials Response in Pediatric Patients Undergoing Spinal Deformity Correction Surgery: What Are the Neurologic Outcomes of Surgery?.	Wang, Shujie; Li, Chaoxiong; Guo, Lanjun; Hu, Haimei; Jiao, Yang; Shen, Jianxiong; Tian, Ye; Zhang, Jianguo		Paediatric population
#1000	Levin 2019	Intraoperative neuromonitoring in paediatric spinal surgery.	Levin, D.; Strantzas, S.; Steinberg, B.		Wrong Study Design
#1042	Ando 2019	Wave Change of Intraoperative Transcranial Motor-Evoked Potentials During Corrective Fusion for Syndromic and Neuromuscular Scoliosis.	Ando, Kei; Kobayashi, Kazuyoshi; Ito, Kenyu; Tsushima, Mikito; Morozumi, Masayoshi; Tanaka, Satoshi; Machino, Masaaki; Ota, Kyotaro; Nishida, Yoshihiro; Ishiguro, Naoki; Imagama, Shiro		Wrong Outcome
#1064	Ashayeri 2018	Retrospective Analysis of EMG-evoked Potentials in Cortical Bone Trajectory Pedicle Screws.	Ashayeri, Kimberly; Sahasrabudhe, Nikhil; Galic, Vladimir; Beric, Aleksandar; Smith, Michael		Wrong Outcome

#1067	Li 2018	Clinical outcomes of posterior pedicle screw instrumentation without osteotomy in the management of adolescent idiopathic scoliosis.	Li, Ning; Xu, Chen; Shen, Ming-kui; Luo, Ming; Wang, Jie; Xia, Lei		Wrong Outcome
#1073	Chen 2018	Factors Associated With Inadequate Intraoperative Baseline Lower Extremity Somatosensory Evoked Potentials.	Chen, Jonathan; Shilian, Parastou; Cheongsiatmoy, Justin; Gonzalez, Andres		Wrong Outcome
#1074	Berends 2018	Influence of the Montage of Stimulation Electrodes for Intraoperative Neuromonitoring During Orthopedic Spine Surgery.	Berends, Hanneke; Journee, Henricus		Wrong Outcome

#1090	Kato 2018	An Analysis of the Incidence and Outcomes of Major Versus Minor Neurological Decline After Complex Adult Spinal Deformity Surgery: A Subanalysis of Scolio-RISK-1 Study.	Kato, So; Fehlings, Michael; MD, PhD; FACS, FRCSC; Lewis, Stephen; MD, MSc; Lenke, Lawrence; Shaffrey, Christopher; Cheung, Kenneth; Carreon, Leah; Dekutoski, Mark; Schwab, Frank; Boachie-Adjei, Oheneba; Kebaish, Khaled; Ames, Christopher; Qiu, Yong; Matsuyama, Yukihiro; Dahl, Benny; Mehdian, Hossein; Pellise, Ferran; Berven, Sigurd		Wrong Outcome
#1163	Wang 2017	Proper Responding Strategies to Neuromonitoring Alerts During Correction Step in Posterior Vertebral Column Resection Patients With Severe Rigid Deformities Can Reduce Postoperative Neurologic Deficits.	Wang, Yingsong; Xie, Jingming; Zhao, Zhi; Li, Tao; Bi, Ni; Zhang, Ying; Shi, Zhiyue		Wrong Outcome

#1169	Hadley 2017	Guidelines for the Use of Electrophysiological Monitoring for Surgery of the Human Spinal Column and Spinal Cord.	Hadley, Mark; Shank, Christopher; Rozzelle, Curtis; Walters, Beverly; C MD, MSc		Wrong Study Design
#1192	Cheah 2017	Intraoperative Use of Neuromonitoring in Multilevel Thoracolumbar Spine Instrumentation and the Effects on Postoperative Neurological Injuries.	Cheah, Jonathan; Zhang, Alan; Tay, Bobby		Wrong Outcome
#1197	Bartley 2017	Perioperative and Delayed Major Complications Following Surgical Treatment of Adolescent Idiopathic Scoliosis.	Bartley, Carrie; Yaszay, Burt; Bastrom, Tracey; Shah, Suken; Lonner, Baron; Asghar, Jahangir; Miyanji, Firoz; Samdani, Amer; Newton, Peter		Wrong Intervention
#1198	Ajiboye 2017	Utility of Intraoperative Neuromonitoring for Lumbar Pedicle Screw Placement Is Questionable: A Review of 9957 Cases.	Ajiboye, Remi; Zoller, Stephen; D'Oro, Anthony; Burke, Zachary; Sheppard, William; Wang, Christopher; Buser, Zorica; Wang, Jeffrey; Pourtaheri, Sina		Wrong Outcome

#1225	Kim 2017	Perioperative Neurologic Complications in Adult Spinal Deformity Surgery: Incidence and Risk Factors in 564 Patients.	Kim, Han; Iyer, Sravisht; Zebala, Luke; Kelly, Michael; Sciubba, Daniel; Protopsaltis, Themistocles; Gupta, Munish; Neuman, Brian; Mundis, Gregory; Ames, Christopher; Smith, Justin; MD, PhD; Hart, Robert; Burton, Douglas; Klineberg, Eric		Wrong Outcome
#1231	Appel 2017	Efficacy of Head Repositioning in Restoration of Electrophysiological Signals During Cervical Spine Procedures.	Appel, Shmuel; Korn, Akiva; Biron, Tali; Goldstein, Kobi; Rand, Nahshon; Millgram, Michael; Floman, Yizhar; Ashkenazi, Ely		Wrong Outcome
#1246	Ajiboye 2017	Routine Use of Intraoperative Neuromonitoring During ACDFs for the Treatment of Spondylotic Myelopathy and Radiculopathy Is Questionable: A Review of 15,395 Cases.	Ajiboye, Remi; D'Oro, Anthony; Ashana, Adedayo; Buerba, Rafael; Lord, Elizabeth; Buser, Zorica; Wang, Jeffrey; Pourtaheri, Sina		Wrong Outcome



#1276	Wang 2016	Deformity Angular Ratio Describes the Severity of Spinal Deformity and Predicts the Risk of Neurologic Deficit in Posterior Vertebral Column Resection Surgery.	Wang, Xiao-bin; Lenke, Lawrence; Thuet, Earl; BS, CNIM; Blanke, Kathy; Koester, Linda; Roth, Michael		Wrong Outcome
#1277	Samdani 2016	Reversible Intraoperative Neurophysiologic Monitoring Alerts in Patients Undergoing Arthrodesis for Adolescent Idiopathic Scoliosis: What Are the Outcomes of Surgery?.	Samdani, Amer; Bennett, James; Ames, Robert; Asghar, Jahangir; Orlando, Giuseppe; Pahys, Joshua; Yaszay, Burt; MiyANJI, Firoz; Lonner, Baron; Lehman, Ronald; Newton, Peter; Cahill, Patrick; Betz, Randal		Wrong Outcome
#1316	Wang 2016	Exploration of the Intraoperative Motor Evoked Potential.	Wang, Shujie; Tian, Ye		Wrong Outcome
#1340	Ney 2015	Does intraoperative neurophysiologic monitoring matter in noncomplex spine surgeries?.	Ney, John; MD, MPH; van der Goes, David; Nuwer, Marc; MD, PhD		Wrong Outcome

#1352	Erdogan 2015	Effective Use of Multimodal Intraoperative Neuromonitoring in Neurosurgery.	Erdogan, Ezgi; Karamursel, Sacit; Kiris, Talat		Wrong Patient Population
#1415	Gavrancic 2014	Train-of-Four Test in Intraoperative Neurophysiologic Monitoring: Differences Between Hand and Foot Train-of-Four.	Gavrancic, Brane; Lolis, Athena; Beric, Aleksandar		Wrong Intervention
#1419	Zhu 2014	Misplacement Pattern of Pedicle Screws in Pediatric Patients With Spinal Deformity: A Computed Tomography Study.	Zhu, Feng; Sun, Xu; Qiao, Jun; Ding, Yitao; Zhang, Bing; Qiu, Yong		Wrong Outcome
#1422	Cole 2014	Intraoperative Neuromonitoring in Single-Level Spinal Procedures: A Retrospective Propensity Score-Matched Analysis in a National Longitudinal Database.	Cole, Tyler; Veeravagu, Anand; Zhang, Michael; Li, Alexander; Ratliff, John; MD, FACS		Wrong Outcome

#1428	Smith 2014	Incidence of Lumbar Spine Pedicle Breach After Percutaneous Screw Fixation: A Radiographic Evaluation of 601 Screws in 151 Patients.	Smith, Zachary; Sugimoto, Koichi; Lawton, Cort; Fessler, Richard; MD, PhD		Wrong Outcome
#1431	Chong 2014	Direct Comparison of the Effect of Desflurane and Sevoflurane on Intraoperative Motor-evoked Potentials Monitoring.	Chong, Chin; Ted MBBS, MMed; Manninen, Pirjo; MD, FRCPC; Sivanaser, Vanitha; MBBS, MMed; Subramanyam, Rajeev; MD, DNB; MNAMS, MS; Lu, Nancy; Venkatraghavan, Lashmi; MD, FRCA		Wrong Outcome
#1466	Dede 2014	Using the Freehand Pedicle Screw Placement Technique in Adolescent Idiopathic Scoliosis Surgery: What Is the Incidence of Neurological Symptoms Secondary to Misplaced Screws?.	Dede, Ozgur; Ward, William; Bosch, Patrick; Bowles, Austin; Roach, James		Wrong Outcome

#1482	Shah 2013	Transcranial motor evoked potential monitoring outcome in the high-risk brain and spine surgeries: Correlation of clinical and neurophysiological data - An Indian perspective.	Shah, Poornima		Wrong Outcome
#1553	Imam 2013	Spinal N22 in diagnosing lumbosacral radiculopathy.	Imam, Mohamed; Hassan, Marwa		Wrong Intervention
#1578	Michael 2012	Intraoperative Neuromonitoring in Spine Surgery.	Michael, Keith; Boden, Scott		Wrong Study Design
#1610	deBlas 2012	Safe Pedicle Screw Placement in Thoracic Scoliotic Curves Using t-EMG: Stimulation Threshold Variability at Concavity and Convexity in Apex Segments.	de Blas, Gema; MD, PhD; Barrios, Carlos; Regidor, Ignacio; Montes, Elena; Burgos, Jesus; Piza-Vallespir, Gabriel; Hevia, Eduardo		Wrong Outcome
#1659	Ovadia 2011	The Contribution of an Electronic Conductivity Device to the Safety of Pedicle Screw Insertion in Scoliosis Surgery.	Ovadia, Dror; Korn, Akiva; Fishkin, Michael; Steinberg, David; Wientroub, Shlomo; Ofiram, Elisha		Wrong Outcome

#1698	Parker 2011	Accuracy of Free-Hand Pedicle Screws in the Thoracic and Lumbar Spine: Analysis of 6816 Consecutive Screws.	Parker, Scott; McGirt, Matthew; Farber, S; Amin, Anubhav; Rick, Anne-Marie; Suk, Ian; Bydon, Ali; Sciubba, Daniel; Wolinsky, Jean-Paul; Gokaslan, Ziya; Witham, Timothy		Wrong Intervention
#1742	Modi 2010	Accuracy of Thoracic Pedicle Screw Using Ideal Pedicle Entry Point in Severe Scoliosis.	Modi, Hitesh; MS, PhD; Suh, Seung-Woo; MD, PhD; 1, a; Hong, Jae-Young; Yang, Jae-Hyuk		Wrong Outcome
#1754	Ayhan 2010	Transthoracic Surgical Treatment for Centrally Located Thoracic Disc Herniations Presenting With Myelopathy: A 5-year Institutional Experience.	Ayhan, Selim; Nelson, Clarke; Gok, Beril; Petteys, Rory; Wolinsky, Jean-Paul; Witham, Timothy; Bydon, Ali; Gokaslan, Ziya; Sciubba, Daniel		Wrong Outcome
#1767	Takahashi 2010	Accuracy of Multilevel Registration in Image-Guided Pedicle Screw Insertion for Adolescent Idiopathic Scoliosis.	Takahashi, Jun; Hirabayashi, Hiroki; Hashidate, Hiroyuki; Ogiwara, Nobuhide; Kato, Hiroyuki		Wrong Outcome

#1771	Duffy 2010	Usefulness of Electromyography Compared to Computed Tomography Scans in Pedicle Screw Placement.	Duffy, Michael; Phillips, Jonathan; Knapp, Dennis; Herrera-Soto, Jose		Wrong Outcome
#1786	Castellon 2009	Intraoperative Neurophysiologic Spinal Cord Monitoring in Thoracolumbar Burst Fractures.	Castellon, Alfredo; Meves, Robert; Avanzi, Osmar		Wrong Outcome
#1791	Hart 2009	Intraoperative Neuromonitoring in Pediatric Spinal Deformity Surgery.	Hart, Erin; Grottkau, Brian		Wrong Study Design
#1800	Xu 2009	Sensitivity and efficacy of intraoperative electromyography monitoring in combination with 3D imaging modality during complex lumbosacral procedures.	Xu, Feng; Yu, Xing; Bi, Lian-yong; Gao, Fei; Ke, Hai; Xu, Lin	Ne: Symbol.	Full Text Not in English

#1819		Motor and Somatosensory Evoked Potentials Are Well Maintained in Patients Given Dexmedetomidine During Spine Surgery.			Wrong Outcome
#1850	Dimopoulos 2009	Quantitative Estimation of the Recurrent Laryngeal Nerve Irritation by Employing Spontaneous Intraoperative Electromyographic Monitoring During Anterior Cervical Discectomy and Fusion.	Dimopoulos, Vasilios; Chung, Induk; Lee, Gregory; Johnston, Kim; MD, FACS; Kapsalakis, Ioannis; Smisson, Hugh; III MD, FACS; Grigorian, Arthur; MD, PhD; Robinson, Joe; Jr MD, FACS; Fountas, Kostas		Wrong Intervention
#1869	TOBIAS 2008	Effects of dexmedetomidine on intraoperative motor and somatosensory evoked potential monitoring during spinal surgery in adolescents.	TOBIAS, JOSEPH; GOBLE, TIMOTHY; BATES, GUY; ANDERSON, JOHN; HOERNSCHEMEYER, DANIEL		Wrong Outcome
#1882	Bala 2008	Motor and Somatosensory Evoked Potentials Are Well Maintained in Patients Given Dexmedetomidine during Spine Surgery.	Bala, Endrit; Sessler, Daniel; Nair, Dileep; McLain, Robert; Dalton, Jarrod; Farag, Ehab		Wrong Outcome

#1901	Donohue 2008	Pulse-Train Stimulation for Detecting Medial Malpositioning of Thoracic Pedicle Screws.	Donohue, Miriam; Murtagh-Schaffer, Catherine; Basta, John; Moquin, Ross; Bashir, Asif; Calancie, Blair		Wrong Outcome
#1906	Sakai 2008	Segmental Pedicle Screwing for Idiopathic Scoliosis Using Computer-assisted Surgery.	Sakai, Yoshihito; Matsuyama, Yukihiro; Nakamura, Hiroshi; Katayama, Yoshito; Imagama, Shiro; Ito, Zenya; Ishiguro, Naoki		Wrong Outcome
#1925	Anschel 2008	Successful Intraoperative Spinal Cord Monitoring During Scoliosis Surgery Using a Total Intravenous Anesthetic Regimen Including Dexmedetomidine.	Anschel, David; Aherne, Andrew; Soto, Roy; Carrion, Wesley; Hoegerl, Carl; Nori, Palgun; Seidman, Peggy		Wrong Outcome
#1937	Lehman 2007	Computed Tomography Evaluation of Pedicle Screws Placed in the Pediatric Deformed Spine Over an 8-Year Period.	Lehman, Ronald; Lenke, Lawrence; Keeler, Kathryn; Kim, Yongjung; Cheh, Gene		Wrong Outcome



#1970		The Use of Somatosensory Evoked Potentials to Determine the Relationship Between Patient Positioning and Impending Upper Extremity Nerve Injury During Spine Surgery: A Retrospective Analysis.			Wrong Outcome
#1995	Tanaka 2006	Postoperative Segmental C5 Palsy After Cervical Laminoplasty May Occur Without Intraoperative Nerve Injury: A Prospective Study With Transcranial Electric Motor-Evoked Potentials.	Tanaka, Nobuhiro; MD, PhD; Nakanishi, Kazuyoshi; Fujiwara, Yasushi; Kamei, Naosuke; Ochi, Mitsuo		Wrong Outcome
#2027	Sala 2006	Motor Evoked Potential Monitoring Improves Outcome after Surgery for Intramedullary Spinal Cord Tumors: A Historical Control Study.	Sala, Francesco; Palandri, Giorgio; Basso, Elisabetta; Lanteri, Paola; Deletis, Vedran; Faccioli, Franco; Bricolo, Albino		Wrong Outcome

#2072	Smorgick 2005	Accuracy and Safety of Thoracic Pedicle Screw Placement in Spinal Deformities.	Smorgick, Yossi; Millgram, Michael; Anekstein, Yoram; Floman, Yizhar; Mirovsky, Yigal		Wrong Outcome
#2085	Thuet 2005	Increased Risk of Postoperative Neurologic Deficit for Spinal Surgery Patients With Unobtainable Intraoperative Evoked Potential Data.	Thuet, Earl; Padberg, Anne; Raynor, Barry; Bridwell, Keith; Riew, K; Taylor, Brett; Lenke, Lawrence		Wrong Outcome
#2127	Liu 2005	Effects of isoflurane and propofol on cortical somatosensory evoked potentials during comparable depth of anaesthesia as guided by bispectral index.	Liu, E.; Wong, H.; Chia, C.; Lim, H.; Chen, Z.; Lee, T.		Wrong Patient Population
#2186	Kim 2004	Free Hand Pedicle Screw Placement in the Thoracic Spine: Is it Safe?	Kim, Yongjung; Lenke, Lawrence; Bridwell, Keith; Cho, Yongsun; Riew, K.		Wrong Outcome

#2203	Rohde 2003	Measurement of motor evoked potentials following repetitive magnetic motor cortex stimulation during isoflurane or propofol anaesthesia.	Rohde, V.; Krombach, G.; Baumert, J.; Kreitschmann-Andermahr, I.; Weinzierl, M.; Gilsbach, J.		Wrong Intervention
#2225	Shi 2003	Electrical Stimulation for Intraoperative Evaluation of Thoracic Pedicle Screw Placement.	Shi, Yong-bing; MD, PhD; Binette, Michael; Martin, William; Pearson, James; Hart, Robert		Wrong Outcome
#2236	Aglia 2002	The Use of Transcranial Magnetic Stimulation for Monitoring Descending Spinal Cord Motor Function.	Aglia, Linda; Romero, Rafael; Desai, Sukumar; Ramirez, Marcela; Gonzalez, Andres; Gugino, Laverne; MD, PhD		Wrong Outcome
#2246	Inoue 2002	Intraoperative Monitoring of Myogenic Motor-Evoked Potentials From the External Anal Sphincter Muscle to Transcranial Electrical Stimulation.	Inoue, Satoki; Kawaguchi, Masahiko; Takashi, Shimoda; Kakimoto, Meiko; Sakamoto, Takanori; Kitaguchi, Katsuyasu; Furuya, Hitoshi; Morimoto, Tetsuya; Sakaki, Toshisuke		Wrong Outcome

#2269	Ku 2002	Effect of sevoflurane/nitrous oxide versus propofol anaesthesia on somatosensory evoked potential monitoring of the spinal cord during surgery to correct scoliosis.	Ku, A.; Hu, Y.; Irwin, M.; Chow, B.; Gunawardene, S.; Tan, E.; Luk, K.		Wrong Outcome
#2291	Reidy 2001	Evaluation of electromyographic monitoring during insertion of thoracic pedicle screws.	Reidy, D.; Houlden, D.; Nolan, P.; Kim, M.; Finkelstein, J.		Wrong Outcome
#2328	Wilson-Holden 2000	A Prospective Comparison of Neurogenic Mixed Evoked Potential Stimulation Methods: Utility of Epidural Elicitation During Posterior Spinal Surgery.	Wilson-Holden, Tracy; Padberg, Anne; Parkinson, Jeffery; Bridwell, Keith; Lenke, Lawrence; Bassett, George		Wrong Intervention
#2334	Toleikis 2000	The Usefulness of Electrical Stimulation for Assessing Pedicle Screw Placements.	Toleikis, J.; Skelly, Jon; Carlvin, Arnold; Toleikis, Sandra; Bernard, Thomas; Burkus, J.; Burr, Max; Dorchak, John; Goldman, Marc; Walsh, Thomas		Wrong Outcome

#2360	Owen 1999	The Application of Intraoperative Monitoring During Surgery for Spinal Deformity.	Owen, Jeffrey		Wrong Study Design
#2385	Laureau 1999	Comparative Study of Propofol and Midazolam Effects on Somatosensory Evoked Potentials during Surgical Treatment of Scoliosis.	Laureau, Emmanuele; Marciniak, Bruno; Hebrard, Anne; Herbaux, Bernard; Guieu, Jean		Wrong Outcome
#2394	Ubags 1999	A Comparison of Myogenic Motor Evoked Responses to Electrical and Magnetic Transcranial Stimulation During Nitrous Oxide/Opioid Anesthesia.	Ubags, Leon; MD, PhD; Kalkman, Cor; Been, Henk; Koelman, Johannes; de Visser, Bram; Ongerboer MD, PhD		Wrong Outcome
#2418	Balzer 1998	Simultaneous Somatosensory Evoked Potential and Electromyographic Recordings during Lumbosacral Decompression and Instrumentation.	Balzer, Jeffrey; Rose, Robert; Welch, William; Sciabassi, Robert; MD, PhD		Wrong Outcome

#2426	Cheng 1998	Posterior Tibial Nerve Somatosensory Cortical Evoked Potentials in Adolescent Idiopathic Scoliosis.	Cheng, Jack; MBBS, FRCS; FACS, FHKAM; Guo, Xia; Sher, Andy		Wrong Outcome
#2428	Darden 1998	A Comparison of Impedance and Electromyogram Measurements in Detecting the Presence of Pedicle Wall Breakthrough.	Darden, Bruce; Owen, Jeffrey; Hatley, Martha; Kostuik, John; Tooke, S.		Wrong Outcome
#2431	Vedran 1997	The Role of Motor Evoked Potentials during Surgery for Intramedullary Spinal Cord Tumors.	Vedran MD, PhD		Wrong Outcome
#2449	Schwarzenbach 1997	Accuracy of Computer-Assisted Pedicle Screw Placement: An In Vivo Computed Tomography Analysis.	Schwarzenbach, Othmar; Berlemann, Ulrich; Jost, Bernhard; Visarius, Heiko; Arm, Erich; Langlotz, Frank; Nolte, Lutz-P.; Ozdoba, Christoph		Wrong Intervention

#2460	Bernard 1996	Effects of Isoflurane and Desflurane on Neurogenic Motor- and Somatosensory-evoked Potential Monitoring for Scoliosis Surgery.	Bernard, Jean-Marc; MD, PhD; Pereon, Yann; Fayet, Guillemette; Guiheneuc, Pierre		Wrong Outcome
#2468	Pechstein 1996	Transcranial High-frequency Repetitive Electrical Stimulation for Recording Myogenic Motor Evoked Potentials with the Patient under General Anesthesia.	Pechstein, Ulrich; Cedzich, Cornelia; Nadstawek, Joachim; Schramm, Johannes		Wrong Outcome
#2475	Woodforth 1996	Variability of Motor-Evoked Potentials Recorded During Nitrous Oxide Anesthesia from the Tibialis Anterior Muscle After Transcranial Electrical Stimulation.	Woodforth, Ian; MB, BS; Hicks, Richard; Crawford, Matthew; Stephen, John; Burke, David; MD, DSc		Wrong Outcome
#2483	Dennis 1996	Monitoring of Median Nerve Somatosensory Evoked Potentials During Cervical Spinal Cord Decompression.	Dennis, G.; Dehkordi, O.; Millis, R.; Cole, A.; Brown, D.; Paul, O.		Wrong Outcome

#2491	Lee 1995	Intraoperative Monitoring of Motor Function by Magnetic Motor Evoked Potentials.	Lee, Wei-Yuh; Hou, Wen-Yeong; Yang, Lin-Huse; Lin, Swei-Ming		Wrong Intervention
#2496	Koyanagi 1993	Spinal Cord Evoked Potential Monitoring after Spinal Cord Stimulation during Surgery of Spinal Cord Tumors.	Koyanagi, Izumi; Iwasaki, Yoshinobu; Isu, Toyohiko; Abe, Hiroshi; Akino, Minoru; Kuroda, Satoshi		Wrong Intervention
#2498	Rappaport 1992	Effects of Anesthesia and Stimulus Intensity on Posterior Tibial Nerve Somatosensory Evoked Potentials.	Rappaport, Maurice; Leonard, Jill; Portillo, Sarbelio		Wrong Outcome
#2504	DVORAK 1990	Motor-Evoked Potentials in Patients with Cervical Spine Disorders.	DVORAK, JIRI; HERDMANN, JORG; JANSSEN, BEATRICE; THEILER, ROBERT; GROB, DIETER		Wrong Intervention
#2517	Min 2018	Accuracy of thoracic pedicle screw placement using freehand technique and triggered EMG in adolescent idiopathic scoliosis: Is it different between concave and convex side?.	Min, Woo-Kie; Na, Sang-Bong; Jang, Jin-An	Journal of orthopaedic surgery (Hong Kong)	Wrong Outcome



#2523	Iacopino 2017	EMG-Guided Percutaneous Placement of Cement-Augmented Pedicle Screws for Osteoporotic Thoracolumbar Burst Fractures.	Iacopino, Domenico Gerardo; Certo, Francesco; Graziano, Francesca; Basile, Luigi; Guli, Carlo; Visocchi, Massimiliano; Conti, Alfredo; Maugeri, Rosario	Acta neurochirurgica. Supplement	Wrong Outcome
#2529	Kumar 2014	Elevated preoperative blood pressure predicts the intraoperative loss of SSEP neuromonitoring signals during spinal surgery.	Kumar, Akash; Chen, Yuangen; Lin, Hung-Mo; Deiner, Stacie	Journal of clinical monitoring and computing	Wrong Outcome
#2532	Holdefer 2013	Utility of evoked EMG monitoring to improve bone screw placements in the cervical spine.	Holdefer, Robert N; Heffez, Daniel S; Cohen, Bernard A	Journal of spinal disorders & techniques	Wrong Outcome
#2538	Regidor 2011	Recording triggered EMG thresholds from axillary chest wall electrodes: a new refined technique for accurate upper thoracic (T2-T6) pedicle screw placement.	Regidor, Ignacio; de Blas, Gema; Barrios, Carlos; Burgos, Jesus; Montes, Elena; Garcia-Urquiza, Sergio; Hevia, Eduardo	European spine journal : official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society	Wrong Outcome

#2540	Samdani 2011	Triggered electromyography for placement of thoracic pedicle screws: is it reliable?.	Samdani, Amer F; Tantorski, Mark; Cahill, Patrick J; Ranade, Ashish; Koch, Stephen; Clements, David H; Betz, Randal R; Asghar, Jahangir	European spine journal : official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society	Wrong Outcome
#2543	Drake 2010	Intraoperative neurophysiological monitoring during complex spinal deformity cases in pediatric patients: methodology, utility, prognostication, and outcome.	Drake, James; Zeller, Reinhard; Kulkarni, Abhaya V; Strantzas, Samuel; Holmes, Laura	Child's nervous system : ChNS : official journal of the International Society for Pediatric Neurosurgery	Wrong Outcome
#2549	Zaarour 2007	Effect of low-dose ketamine on voltage requirement for transcranial electrical motor evoked potentials in children.	Zaarour, Christian; Engelhardt, Thomas; Strantzas, Samuel; Pehora, Carolyne; Lewis, Stephen; Crawford, Mark W	Spine	Wrong Outcome
#2551	Sutter 2007	Multimodal intraoperative monitoring: an overview and proposal of methodology based on 1,017 cases.	Sutter, Martin; Eggspuehler, Andreas; Muller, Alfred; Dvorak, Jiri	European spine journal : official publication of the European Spine Society, the European Spinal Deformity Society, and the European	Wrong Outcome

				Section of the Cervical Spine Research Society	
#2558	Bose 2004	Neurophysiological monitoring of spinal cord function during instrumented anterior cervical fusion.	Bose, Bikash; Sestokas, Anthony K; Schwartz, Daniel M	The spine journal : official journal of the North American Spine Society	Wrong Outcome
#2564	Cioni 1999	Intraoperative motor evoked potentials monitoring in spinal neurosurgery.	Cioni, B; Meglio, M; Rossi, G F	Archives italiennes de biologie	Wrong Study Design
#2569	Maguire 1995	Evaluation of intrapedicular screw position using intraoperative evoked electromyography.	Maguire, J; Wallace, S; Madiga, R; Leppanen, R; Draper, V	Spine	Wrong Outcome
#2570	Erwin 1993	Up and down the spinal cord: intraoperative monitoring of sensory and motor spinal cord pathways.	Erwin, C W; Erwin, A C	Journal of clinical neurophysiology : official publication of the American Electroencephalographic Society	Wrong Study Design
#285	Agarwal 2017	Intraoperative Neurophysiologic Monitoring	Agarwal N.; Hamilton D.K.; Ozpinar A.; Choi P.; Hart R.; Yaylali I.	World Neurosurgery	No 2x2

		for Adult Patients Undergoing Posterior Spinal Fusion			
#169	Barsotti 2020	Diagnostic accuracy of perioperative electromyography in the positioning of pedicle screws in adolescent idiopathic scoliosis treatment: A cross-sectional diagnostic study	Barsotti C.E.; Gavassi B.M.; Prado F.E.; Batista B.N.; De Resende Pratali R.; Ribeiro A.P.; De Oliveira C.E.S.; Ferreira R.R.	BMC Musculoskeletal Disorders	No 2x2
#1904	Cheh 2008	Loss of Spinal Cord Monitoring Signals in Children During Thoracic Kyphosis Correction With Spinal Osteotomy: Why Does It Occur and What Should You Do?	Cheh, Gene; Lenke, Lawrence; Padberg, Anne; MS, CCC-A; Kim, Yongjung; Daubs, Michael; MD, FACS; Kuhns, Craig; Stobbs, Georgia; Hensley, Marsha		Wrong Outcome
#41	Chen 2013	Comparison of the wake-up test and combined TES-MEP and CSEP monitoring in spinal surgery	Chen B.; Chen Y.; Yang J.; Xie D.; Su H.; Li F.; Wan Y.; Peng X.; Zheng Z.	Journal of Spinal Disorders and Techniques	Wrong Outcome

#756	Chen 2022	Intraoperative Neuromonitoring Auxiliary Significance of DNEP for MEP-positive Event During Severe Spinal Deformity Surgery.	Chen, Jian; Deng, Yao-long; Sui, Wen-yuan; Yang, Jing-fan; MD, PhD; Xu, Jing; Huang, Zi- fang; Yang, Jun-lin		No 2x2
#168	Cousino 2020	Anterolateral S1 screw malposition detected with intraoperative neurophysiological monitoring during posterior lumbosacral fusion	Cousino J.P.C.; Luna F.; Torche M.; Viguera S.; Torche E.; Valdes G.	Surgical Neurology International	No 2x2
#828	Krzeptowsky 2021	Neurophysiological Intraoperative Monitoring in the Elderly.	De la Maza Krzeptowsky, Lilia; San-Juan, Daniel; Ximenez Camilli, Cecilia; Alvarez Perera, Luis; Valdez Ruvalcaba, Hector; Morales Baez, Jorge; Ansel, David		No 2x2

#1676	Hamilton 2011	Rates of New Neurological Deficit Associated With Spine Surgery Based on 108,419 Procedures: A Report of the Scoliosis Research Society Morbidity and Mortality Committee.	Hamilton, D.; Smith, Justin; MD, PhD; Sansur, Charles; MD, MHSc; Glassman, Steven; Ames, Christopher; Berven, Sigurd; Polly, David; Perra, Joseph; Knapp, Dennis; Boachie-Adjei, Oheneba; McCarthy, Richard; Shaffrey, Christopher		No 2x2
#2234	Hu 2003	Application of time-frequency analysis to somatosensory evoked potential for intraoperative spinal cord monitoring.	Hu, Y; Luk, K; Lu, W; Leong, J		Wrong Outcome
#144	Kobayashi 2021	Effects of Preoperative Motor Status on Intraoperative Motor-evoked Potential Monitoring for High-risk Spinal Surgery: A Prospective Multicenter Study	Kobayashi K.; Imagama S.; Yoshida G.; Ando M.; Kawabata S.; Yamada K.; Kanchiku T.; Fujiwara Y.; Taniguchi S.; Iwasaki H.; Tadokoro N.; Takahashi M.; Wada K.; Yamamoto N.; Shigematsu H.; Funaba M.; Yasuda A.; Kobayashi S.;	Spine	Wrong Outcome

			Ushirozako H.; Tani T.; Matsuyama Y.		
#234	Lakomkin 2018	Utility of Intraoperative Monitoring in the Resection of Spinal Cord Tumors	Lakomkin N.; Mistry A.M.; Zuckerman S.L.; Ladner T.; Kothari P.; Lee N.J.; Stannard B.; Vasquez R.A.; Cheng J.S.	Spine	Wrong Intervention
#201	Lieberman 2019	The reliability of motor evoked potentials to predict dorsiflexion injuries during lumbosacral deformity surgery: importance of multiple myotomal monitoring	Lieberman J.A.; Lyon R.; Jasiukaitis P.; Berven S.H.; Burch S.; Feiner J.	Spine Journal	Wrong Outcome
#292	Morishige 2017	Application of compound action potential of facial muscles evoked by transcranial stimulation as a reference waveform of motor-evoked potential in spinal surgery	Morishige M.; Takeda M.; Yamaguchi S.; Sugiyama K.; Kurusu K.	Hiroshima Journal of Medical Sciences	Wrong Intervention

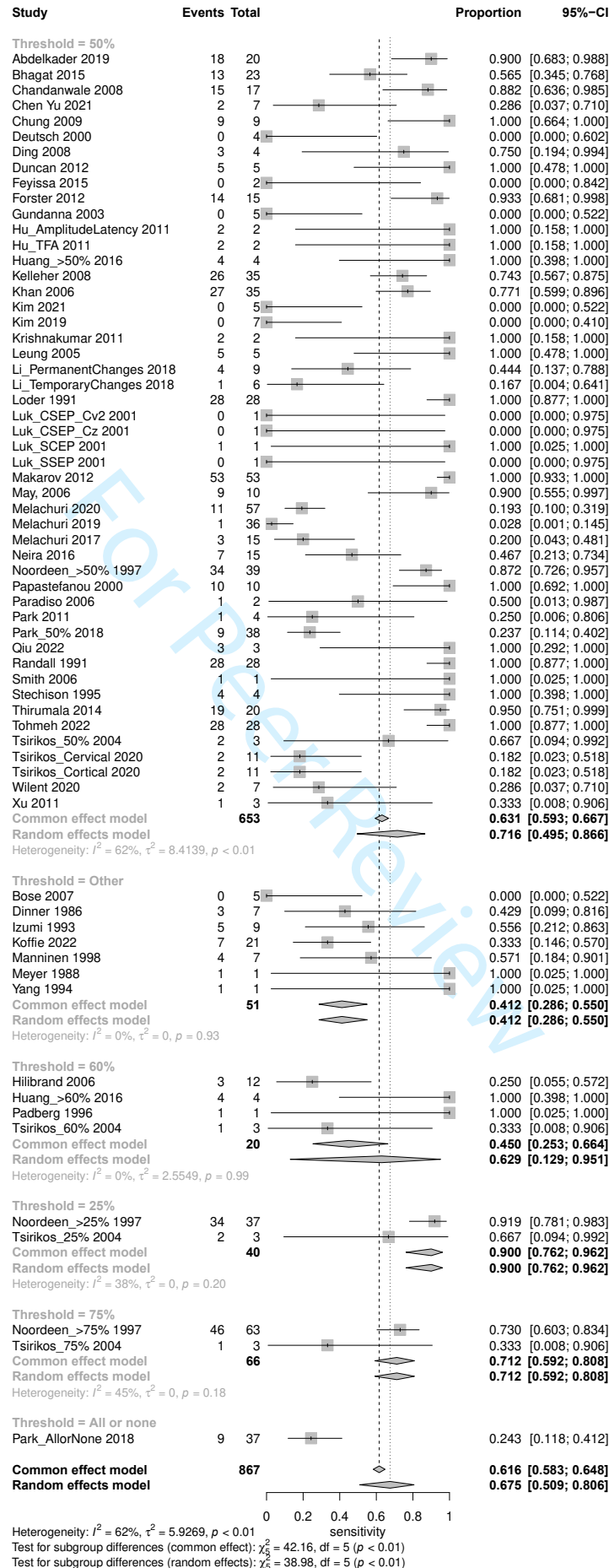
#2388	Norcross-Nechay 1999	Intraoperative Somatosensory Evoked Potential Findings in Acute and Chronic Spinal Canal Compromise.	Norcross-Nechay, Karyl; MD, PhD; Mathew, Titus; Simmons, James; Hadjipavlou, Alexander		No 2x2
#2537	Parker 2011	Ability of electromyographic monitoring to determine the presence of malpositioned pedicle screws in the lumbosacral spine: analysis of 2450 consecutively placed screws.	Parker, Scott L; Amin, Anubhav G; Farber, S Harrison; McGirt, Matthew J; Sciubba, Daniel M; Wolinsky, Jean-Paul; Bydon, Ali; Gokaslan, Ziya L; Witham, Timothy F	Journal of neurosurgery. Spine	Wrong Outcome
#543	Raynor 2007	Correlation between low triggered electromyographic thresholds and lumbar pedicle screw malposition: Analysis of 4857 screws	Raynor B.L.; Lenke L.G.; Bridwell K.H.; Taylor B.A.; Padberg A.M.	Spine	Wrong Outcome
#207	Shao 2019	The efficacy of intraoperative multimodal monitoring in pedicle subtraction osteotomies of the lumbar spine	Shao J.; Lee M.Y.; Louis S.; Knusel K.; Lee B.S.; Pelle D.W.; Savage J.; Tanenbaum J.E.; Mroz T.E.; Steinmetz M.P.	Journal of Neurosurgery: Spine	No 2x2

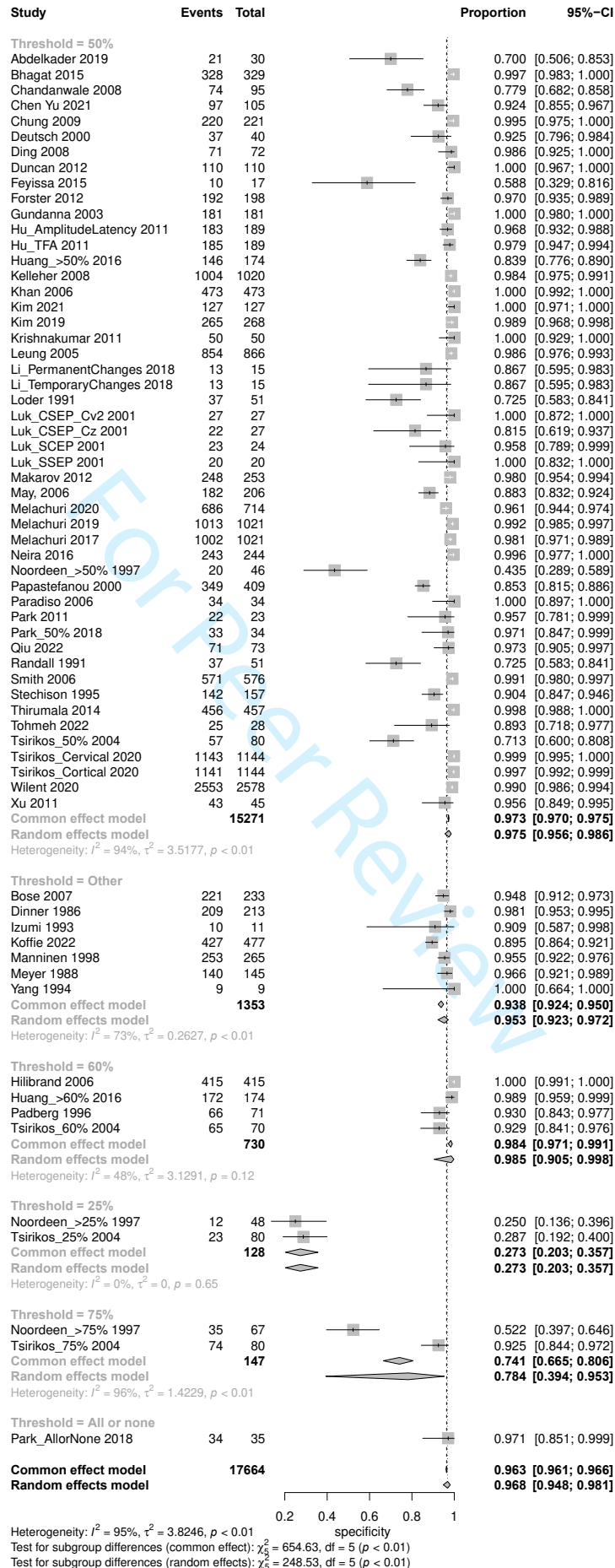


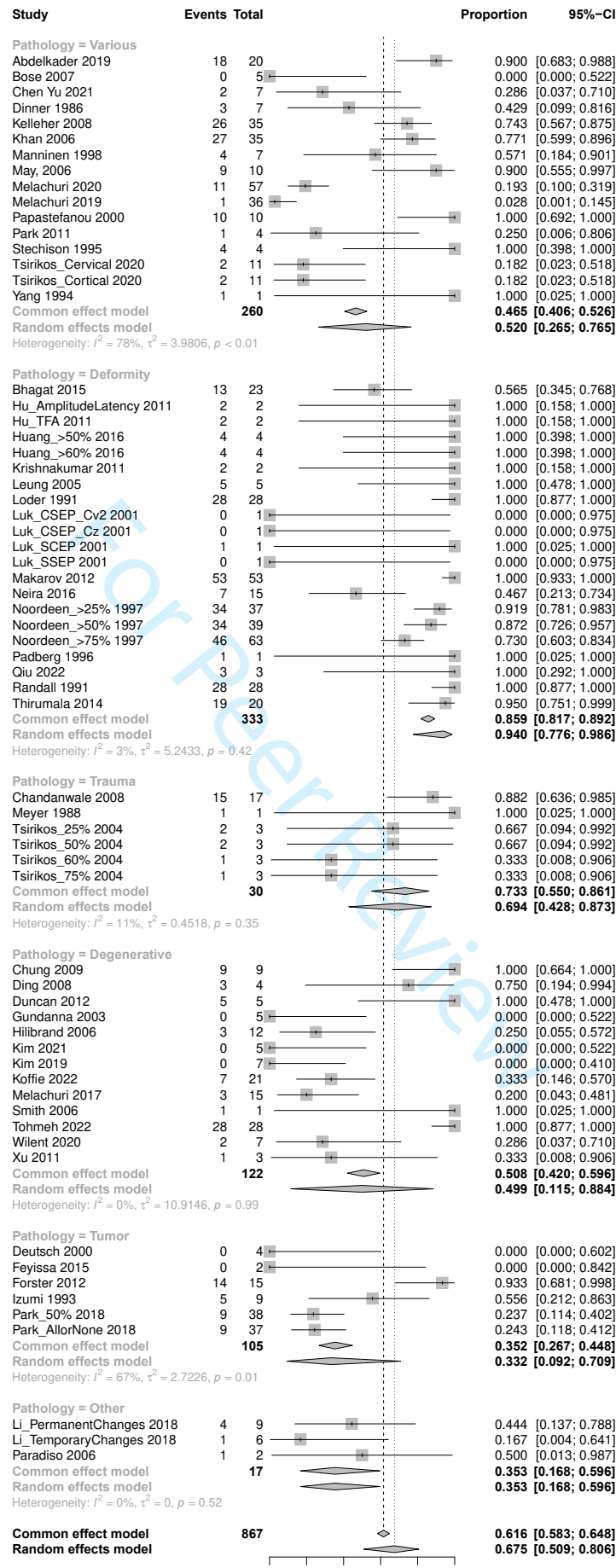
#2506	Szalay 1986	Sensitivity of Spinal Cord Monitoring to Intraoperative Events.	Szalay, Elizabeth; Carollo, James; Roach, James		No Full Text
#231	Tamkus 2018	Transcranial Motor Evoked Potential Alarm Criteria to Predict Foot Drop Injury during Lumbosacral Surgery	Tamkus A.; Rice K.S.; Hoffman G.	Spine	No 2x2
#1023	Tanaka 2019	Cutoff Points, Sensitivities, and Specificities of Intraoperative Motor-Evoked Potential Monitoring Determined Using Receiver Operating Characteristic Analysis.	Tanaka, Satoshi; Akimoto, Jiro; Hashimoto, Ryo; Takanashi, Junko; Oka, Hidehiro		No 2x2
#25	Tani 2022	Threshold-based Monitoring of Compound Muscle Action Potentials for Percutaneous Pedicle Screw Placement in the Lumbosacral Spine: Can We Rely on Stimulation of the Uninsulated Screw to Provide a Valid Safety Warning?	Tani Y.; Saito T.; Taniguchi S.; Ishihara M.; Paku M.; Adachi T.; Ando M.; Kohara N.; Kimura J.	Spine	Wrong Outcome

#268	Tobert 2017	Efficacy of Intraoperative Neurophysiologic Monitoring for Pediatric Cervical Spine Surgery	Tobert D.G.; Glotzbecker M.P.; Hresko M.T.; Karlin L.I.; Proctor M.R.; Emans J.B.; Miller P.E.; Hedequist D.J.	Spine	Paediatric population
#387	Ukegawa 2014	Efficacy of biphasic transcranial electric stimulation in intraoperative motor evoked potential monitoring for cervical compression myelopathy	Ukegawa D.; Kawabata S.; Sakaki K.; Ishii S.; Tomizawa S.; Inose H.; Yoshii T.; Kato T.; Enomoto M.; Okawa A.	Spine	Wrong Outcome
#645	Wilson-Holden 1999	Efficacy of intraoperative monitoring for pediatric patients with spinal cord pathology undergoing spinal deformity surgery	Wilson-Holden T.J.; Padberg A.M.; Lenke L.G.; Larson B.J.; Bridwell K.H.; Bassett G.S.	Spine	No 2x2
#678	Yang 1994	Intraoperative transcranial electrical motor evoked potential monitoring during spinal surgery under intravenous ketamine or etomidate anaesthesia	Yang L.-H.; Lin S.-M.; Lee W.-Y.; Liu C.-C.	Acta Neurochirurgica	Wrong Outcome

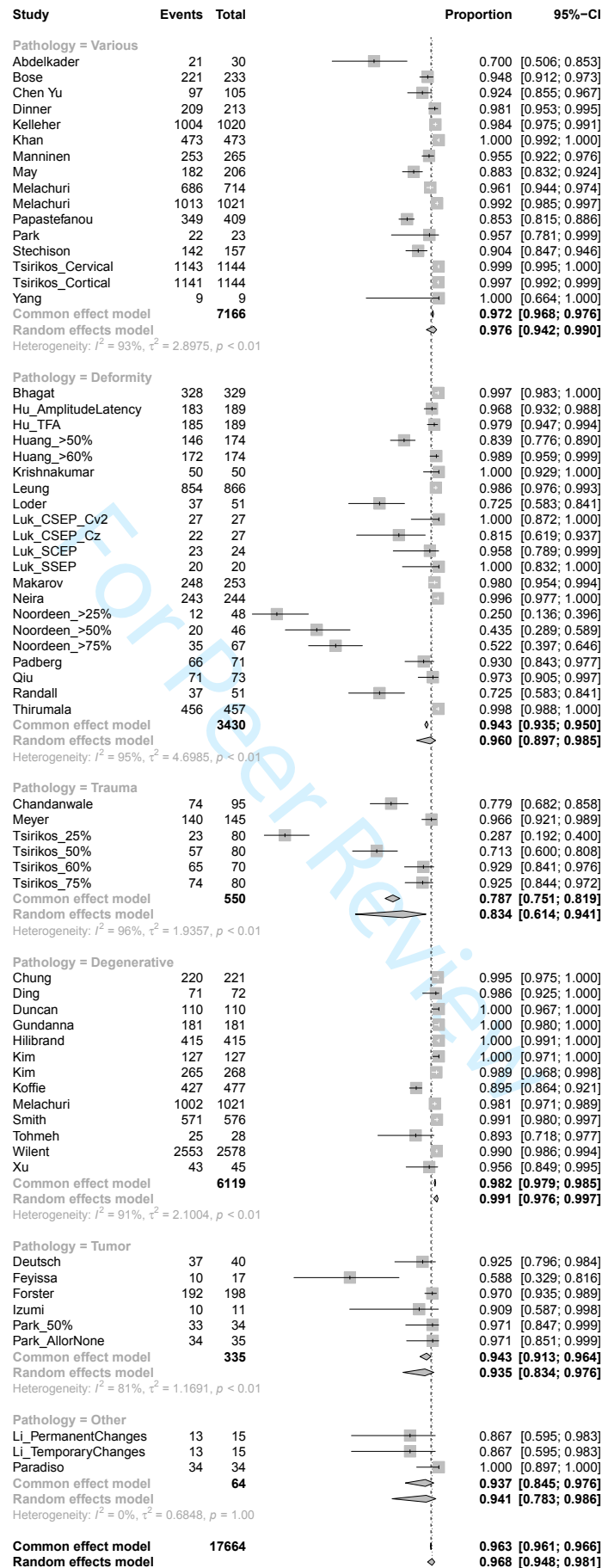
#187	Yoshida 2019	Adverse Events Related to Transcranial Electric Stimulation for Motor-evoked Potential Monitoring in High-risk Spinal Surgery	Yoshida G.; Imagama S.; Kawabata S.; Yamada K.; Kanchiku T.; Fujiwara Y.; Tadokoro N.; Takahashi M.; Wada K.; Yamamoto N.; Ushirozako H.; Kobayashi K.; Yasuda A.; Ando M.; Tani T.; Matsuyama Y.	Spine	Wrong Outcome
#313	Raynor 2016	Failure of Intraoperative Monitoring to Detect Postoperative Neurologic Deficits: A 25-year Experience in 12,375 Spinal Surgeries	Raynor B.L.; Padberg A.M.; Lenke L.G.; Bridwell K.H.; Riew K.D.; Buchowski J.M.; Luhmann S.J.	Spine	No 2x2
#345	Murcow 2013	Spinal Cord Monitoring With Transcranial Motor Evoked Potentials in Patients With Neural Axis Abnormalities Undergoing Spinal Deformity Surgery	Ryan D. Muchow, MDa,* , Anna McClung, BSN, RNb, Patricia Rampy, MS, R EP T, CNIMb, Elizabeth Van Allen, MS, R EP T, CNIMb, Steven Sparagana, MDb, Daniel J. Sucato, MD, MS	Spine Deformity	No/ Incomplete 2x2





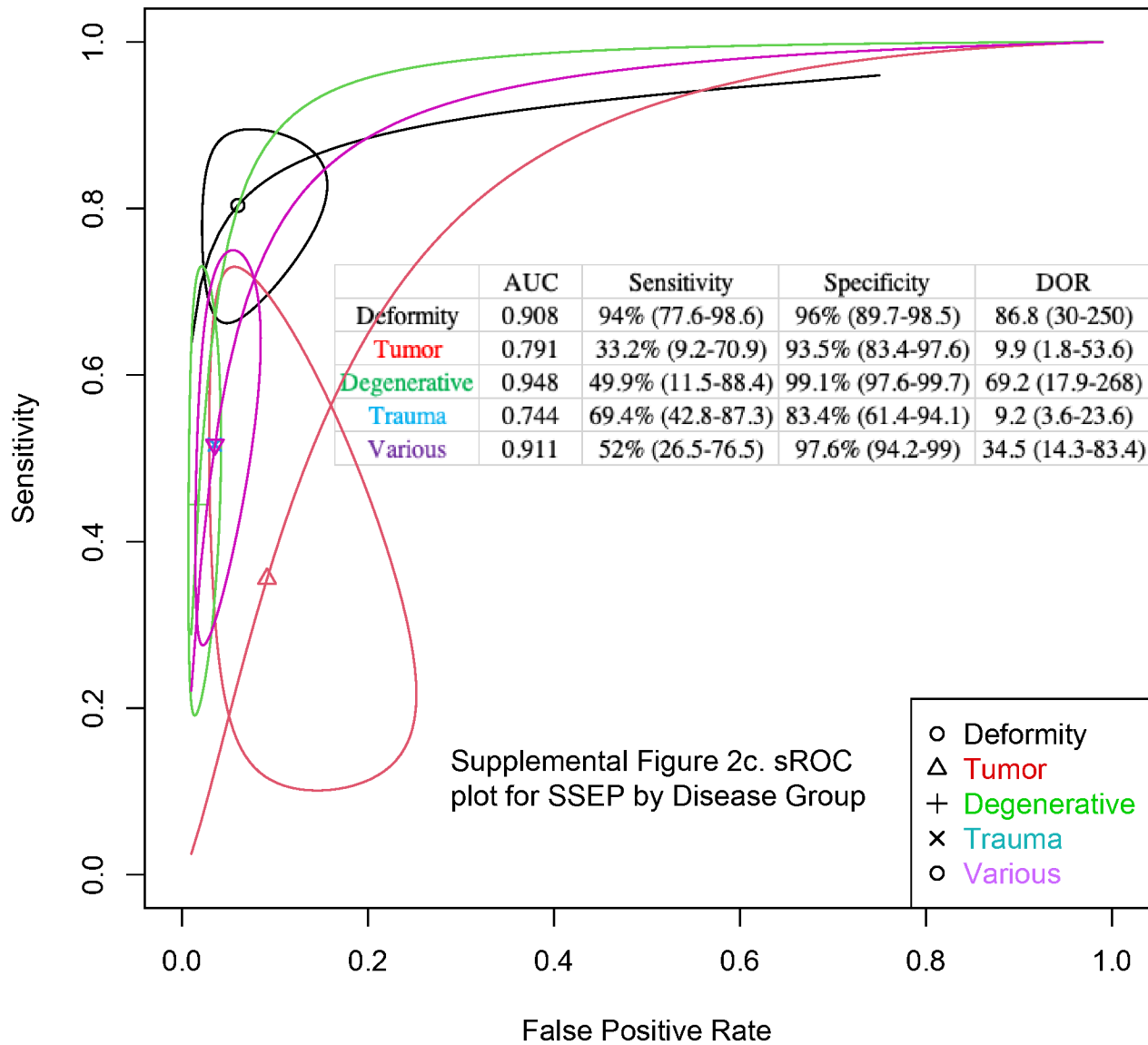


Heterogeneity:  $I^2 = 62\%$ ,  $\tau^2 = 5.9269$ ,  $p < 0.01$   
 Test for subgroup differences (common effect):  $\chi^2_5 = 132.04$ ,  $df = 5$  ( $p < 0.01$ )  
 Test for subgroup differences (random effect):  $\chi^2_5 = 15.99$ ,  $df = 5$  ( $p < 0.01$ )



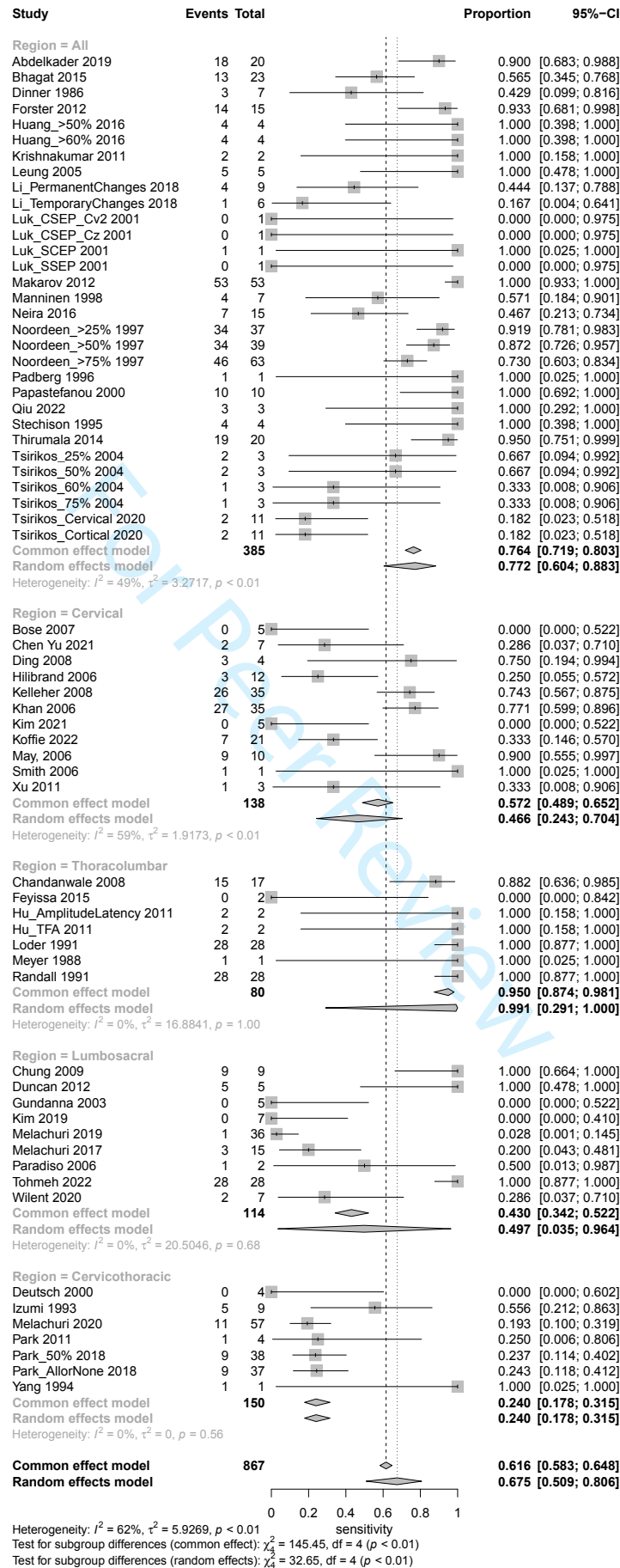
Heterogeneity:  $I^2 = 95\%$ ,  $\tau^2 = 3.8246$ ,  $p < 0.01$   
 Test for subgroup differences (common effect):  $\chi^2_5 = 437.87$ ,  $df = 5$  ( $p < 0.01$ )  
 Test for subgroup differences (random effects):  $\chi^2_5 = 18.56$ ,  $df = 5$  ( $p < 0.01$ )

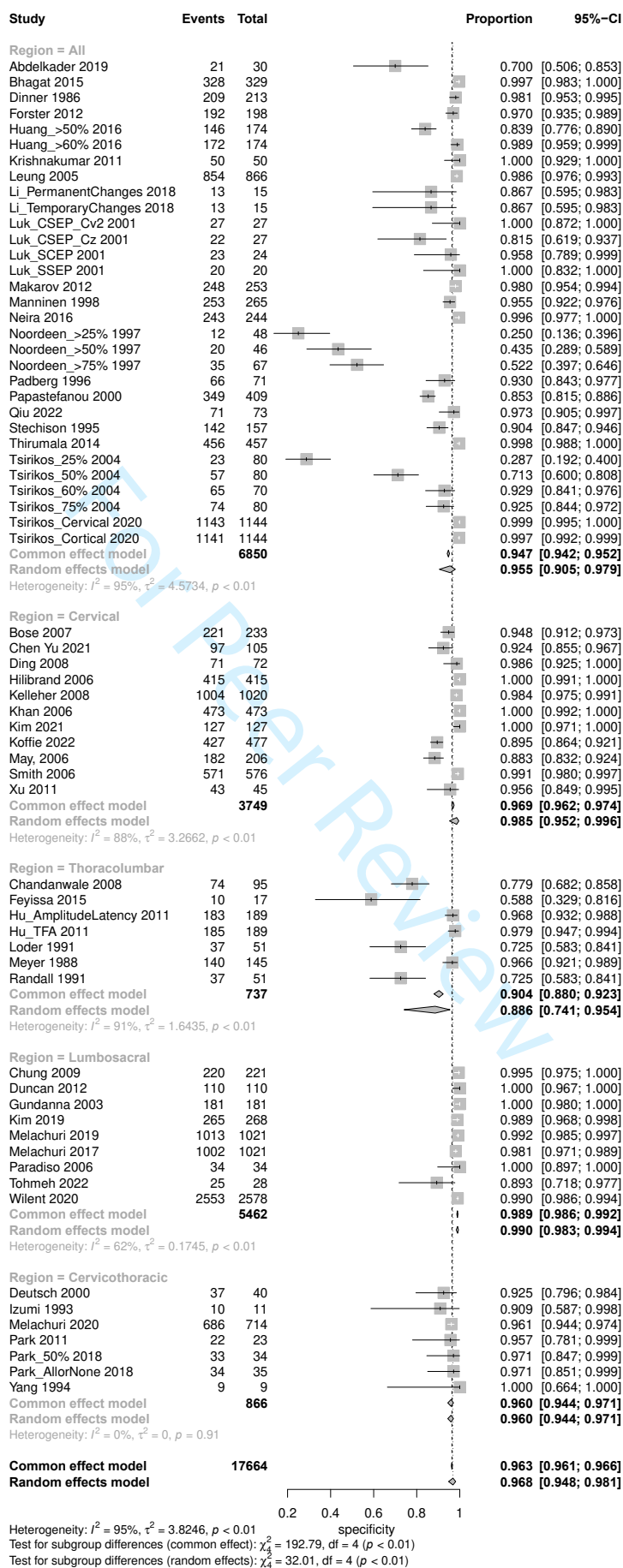
### Comparison of sROC for SSEP for Different Regions



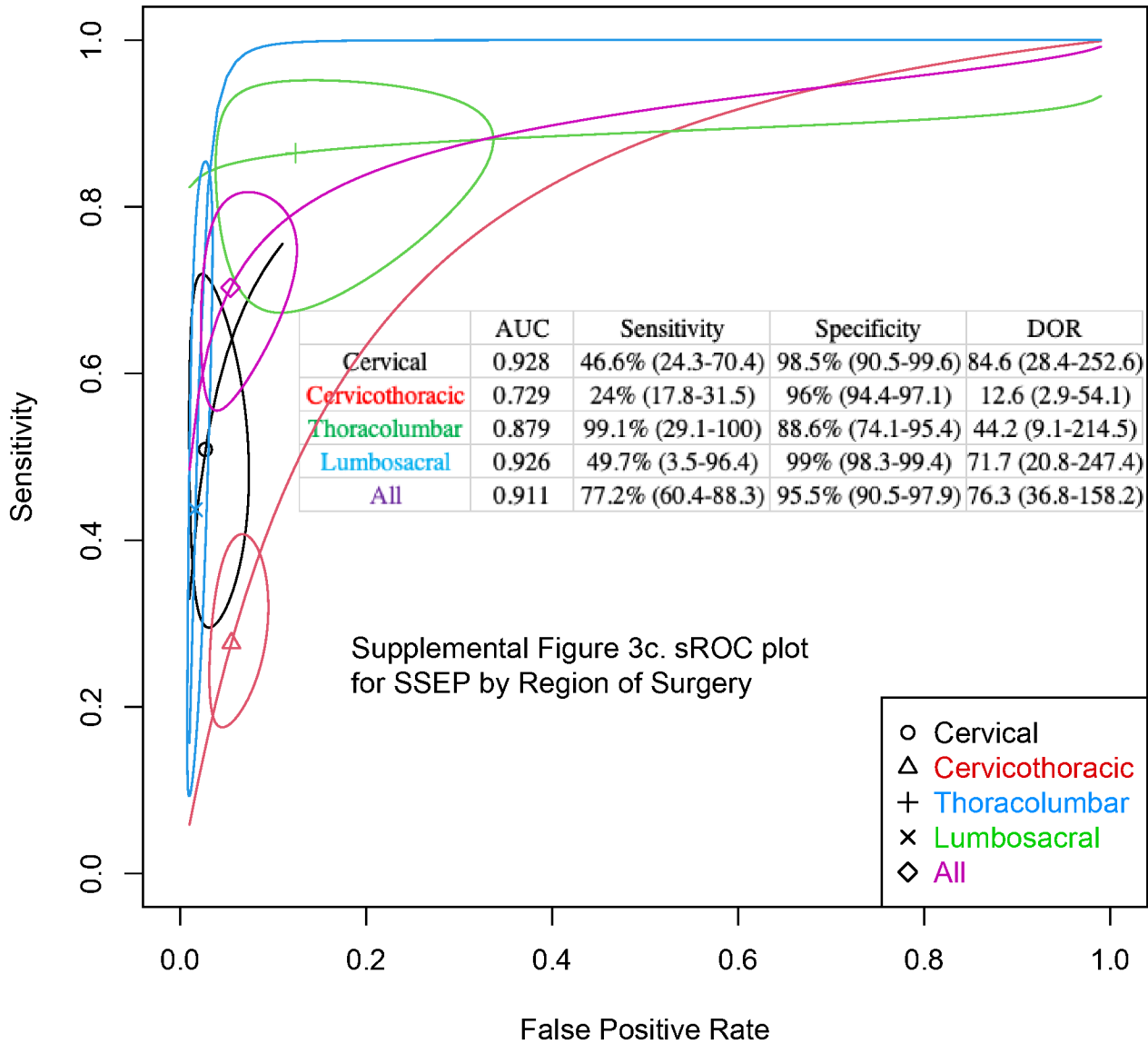


Supplemental Figure 3a. Forest plot for Sensitivity for SSEP by Region of Surgery





### Comparison of sROC for SSEP for Different Regions



Supplemental Figure 4a. Forest plot for Sensitivity for MEP by Threshold Type

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0.600 [0.200; 0.900]  
0.529 [0.394; 0.661]  
0.636 [0.339; 0.857]  
0.200 [0.11; 0.847]  
1.000 [0.063; 0.984]  
0.568 [0.463; 0.675]  
0.568 [0.463; 0.675]

Threshold = All or None  
Avila 2013  
Libati 1999  
Muramoto, Presence\_Absence 2014  
Park, AllorNone 2018  
Sakaki\_SpinalSegment5 2012  
Sakaki\_SpinalTract6 2012  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 0.92$

Threshold = 10% Decrease  
Sakaki\_SpinalSegment5 2012  
Sakaki\_SpinalTract5 2012  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 1.00$

Threshold = 20% Decrease  
Sakaki\_SpinalSegment4 2012  
Sakaki\_SpinalTract4 2012  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 1.00$

Threshold = 30% Decrease  
Sakaki\_SpinalSegment2 2012  
Sakaki\_SpinalTract3 2012  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 1.00$

Threshold = 40% Decrease  
Sakaki\_SpinalSegment2 2012  
Sakaki\_SpinalTract2 2012  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 1.00$

Threshold = 50% Decrease  
Boase 2007  
Clark 2016  
Clark, Persistent 2013  
Clark, Temporary 2013  
Comtes 2017  
Forster 2012  
Fujiwara 2016  
Hsu 2008  
Hyun 2009  
Ito, Graded 2012  
Jarvis 2013  
Kelleher 2008  
Li, >50% Amp, Permanent 2018  
Li, >50% Amp, Temporary 2018  
Luk 2001  
Megha Br, D-Wave, Immediate Postoperative 2021  
Megha Br, D-Wave, Long Term 2021  
Megha Br, TcMEP, Immediate Postoperative 2021  
Megha Br, TcMEP, Long Term 2021  
Oya 2017  
Park 2011  
Park, 50% 2018  
Quinones, 2005  
Sakaki\_SpinalSegment1 2012  
Sakaki\_SpinalTract1 2012  
Velayutham 2016  
Wilent 2020  
Yang 1994  
Zuccaro 2017  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 50\%$ ,  $\tau^2 = 1.4752$ ,  $p < 0.01$

Threshold = 50%-65%  
Wilent 2019

Threshold = 60%-80%  
Kim 2019

Threshold = 60% Decrease  
Hilibrand 2004

Threshold = 65% Decrease  
Bhalodia 2013  
Krishnakumar 2011  
Kundman 2010  
Neira 2016  
Traba, >65% Amp 2013  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 0.99$

Threshold = 70% Decrease  
Funaba 2022  
Funaba 2022  
Funaba 2021  
Kobayashi 2021  
Kobayashi 2019  
Kobayashi 2021  
Kobayashi 2022  
Kobayashi 2014  
Kobayashi, 2018, >70% Amp 2018  
Kobayashi, 2018, >70% Amp&10% Latency 2018  
Kobayashi, 2018, >70% Amp&15% Latency 2018  
Kobayashi, 2018, Thoracic, >70% Amp 2018  
Kobayashi, 2018, Thoracic, >70% Amp&10% Latency 2018  
Kobayashi, 2018, Thoracic, >70% Amp&15% Latency 2018  
Muramoto 2013  
Muramoto, 70% 2014  
Takahashi 2021  
Traba, >70% Amp 2013  
Ushirozaka 2018  
Ushirozaka 2019  
Ushirozaka 2020  
Ushirozaka, EMSCT 2021  
Ushirozaka, JMSCT 2021  
Yoshida 2022  
Yoshida 2018  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 30\%$ ,  $\tau^2 = 1.1608$ ,  $p = 0.03$

Threshold = 75% Decrease  
Choi 2014  
Feng 2012  
Traba, >75% Amp 2013  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 0.43$

Threshold = 80% Decrease  
Bhagat 2015  
Chen, Yu, 2021  
Kim 2021  
Kim 2007  
Kurukawa 2017  
Langoo Criteria 1 2003  
Langoo Criteria 2 2003  
Langoo Criteria 3 2003  
Li, >80% Amp, Permanent 2018  
Li, >80% Amp, Temporary 2018  
Fadberg 1996  
Olu 2022  
Tanaka, 1, With, CMAP, Normalization 2015  
Tanaka, 2, Without, CMAP, Normalization 2015  
Traba, >80% Amp 2013  
Tsai 2020  
Wang 2016  
Wang 2015  
Wang, 2 2016  
Zhuang 2014  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 2.5962$ ,  $p = 0.65$

Threshold = Latency >10%  
Kobayashi, 2018, >10% Latency 2018  
Kobayashi, 2018, Thoracic, >10% Latency 2018  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = 0$ ,  $p = 1.00$

Threshold = Latency >15%  
Kobayashi, 2018, >15% Latency 2018  
Kobayashi, 2018, Thoracic, >15% Latency 2018  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 0\%$ ,  $\tau^2 = < 0.0001$ ,  $p = 1.00$

Threshold = Other  
Calancie 1998  
Calancie 2008  
Ro, 16 channel 2013  
Ro, 4 channel 2013  
Ro, 8 channel 2013  
Ro, CMAP 2012  
Ro, CMAP 2012  
Kim, AH 2012  
Kim, TA 2012  
Koffe 2022  
Miller 2019  
Sutter, cmEP 2019  
Sutter, smEP 2019  
Traba, >70% Area 2013  
Common effect model  
Random effects model  
Heterogeneity:  $I^2 = 46\%$ ,  $\tau^2 = 5.8583$ ,  $p = 0.03$

Threshold = Spinal Cord Changes  
Xu 2021

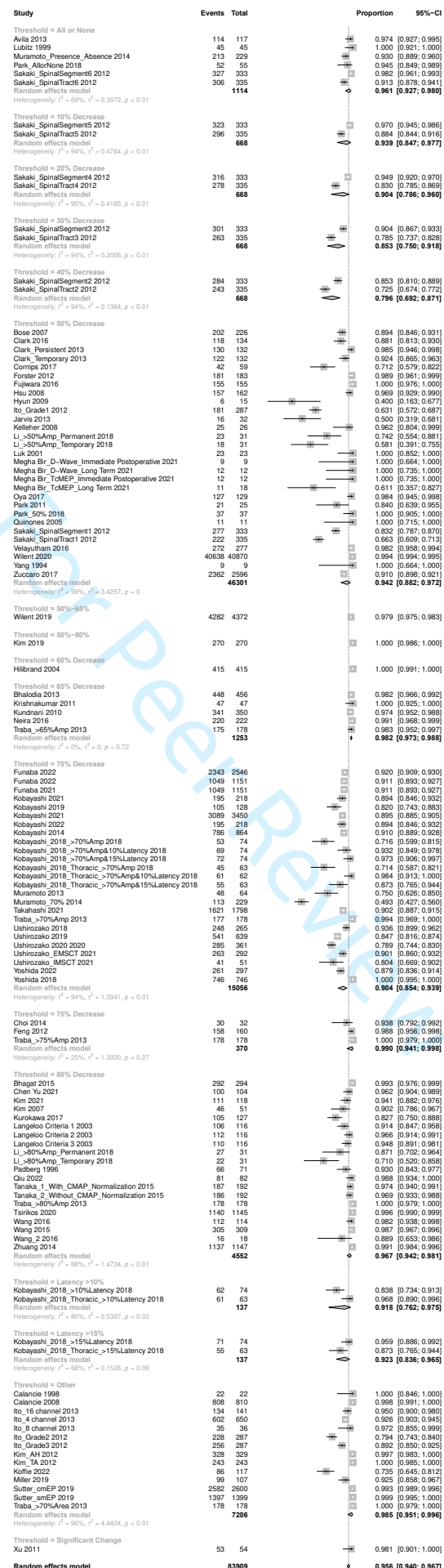
Common effect model  
Random effects model

Heterogeneity:  $I^2 = 32\%$ ,  $\tau^2 = 1.9159$ ,  $p < 0.01$   
Test for subgroup differences (common effect):  $\chi^2 = 56.86$ ,  $df = 16$  ( $p < 0.01$ )  
Test for subgroup differences (random effects):  $\chi^2 = 54.03$ ,  $df = 16$  ( $p < 0.01$ )

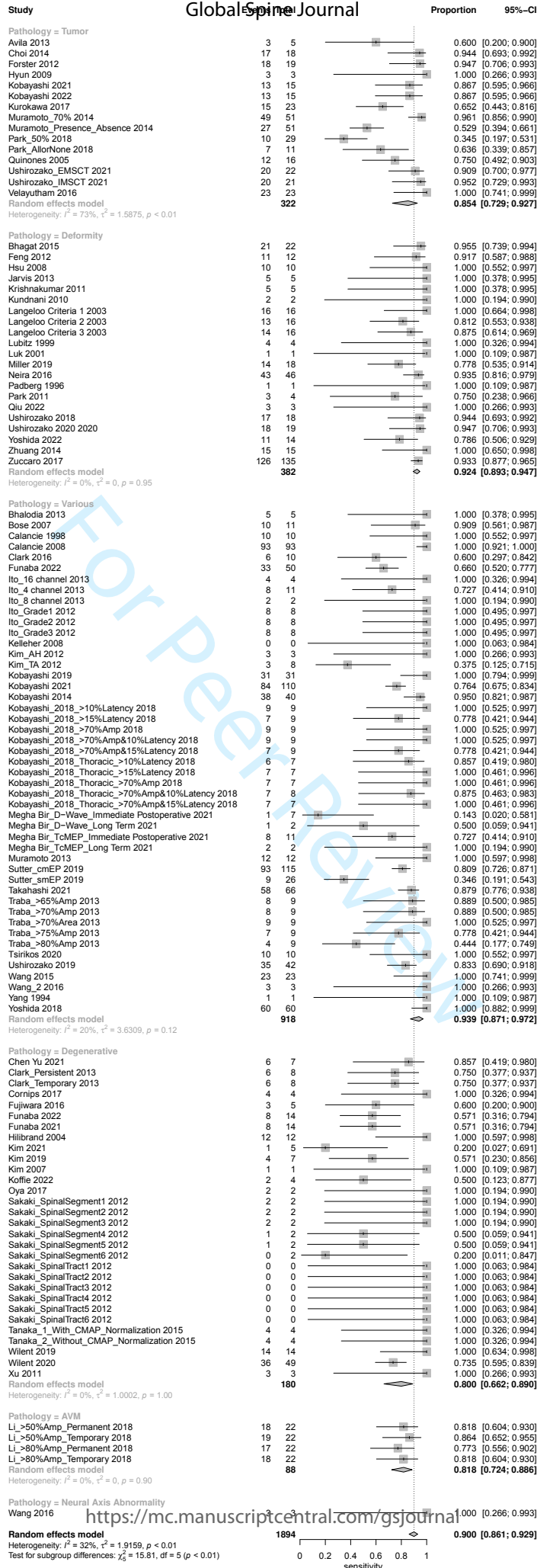
0.842 [0.825; 0.858]  
0.900 [0.861; 0.928]

sensitivity

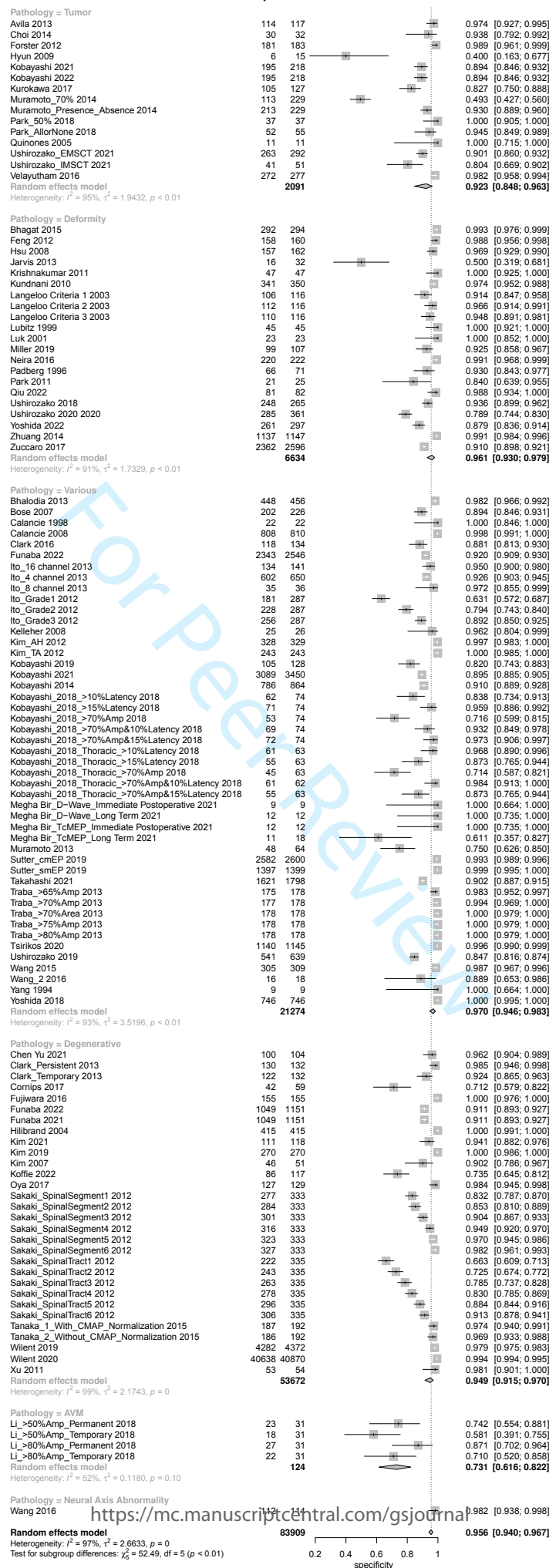
https://mc.manuscriptcentral.com/gsjournal



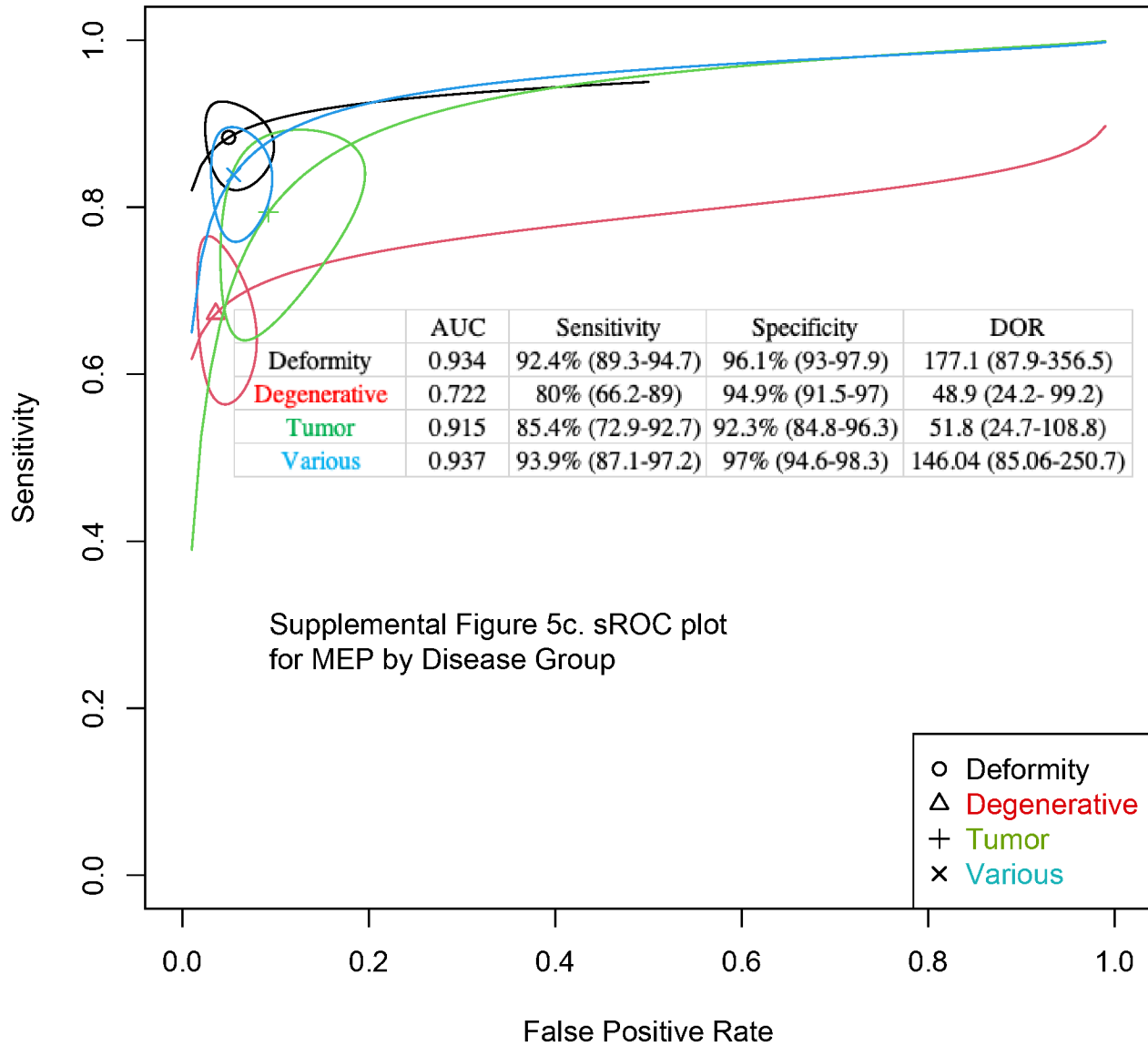
Supplemental Figure 5a. Forest plot for Sensitivity for MEP by Disease Group



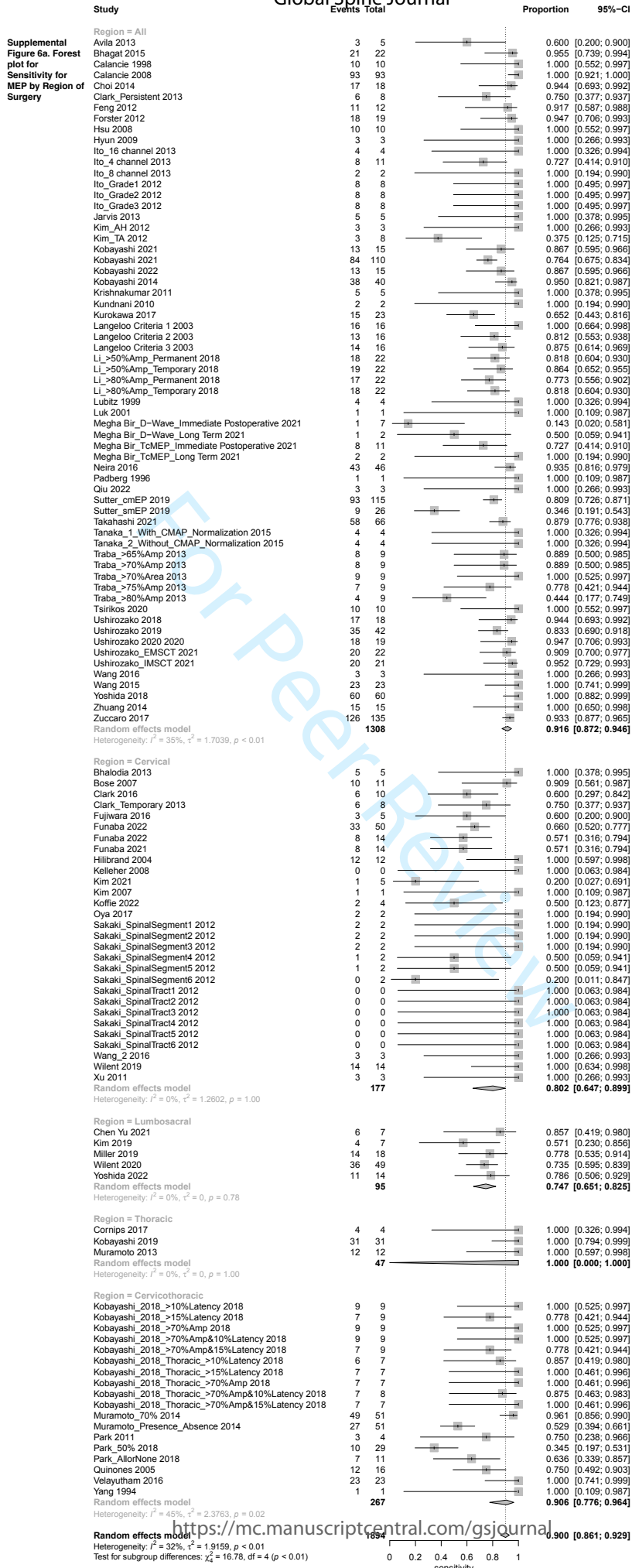
Supplemental Figure S5. Forest plot for MEP by Disease Group

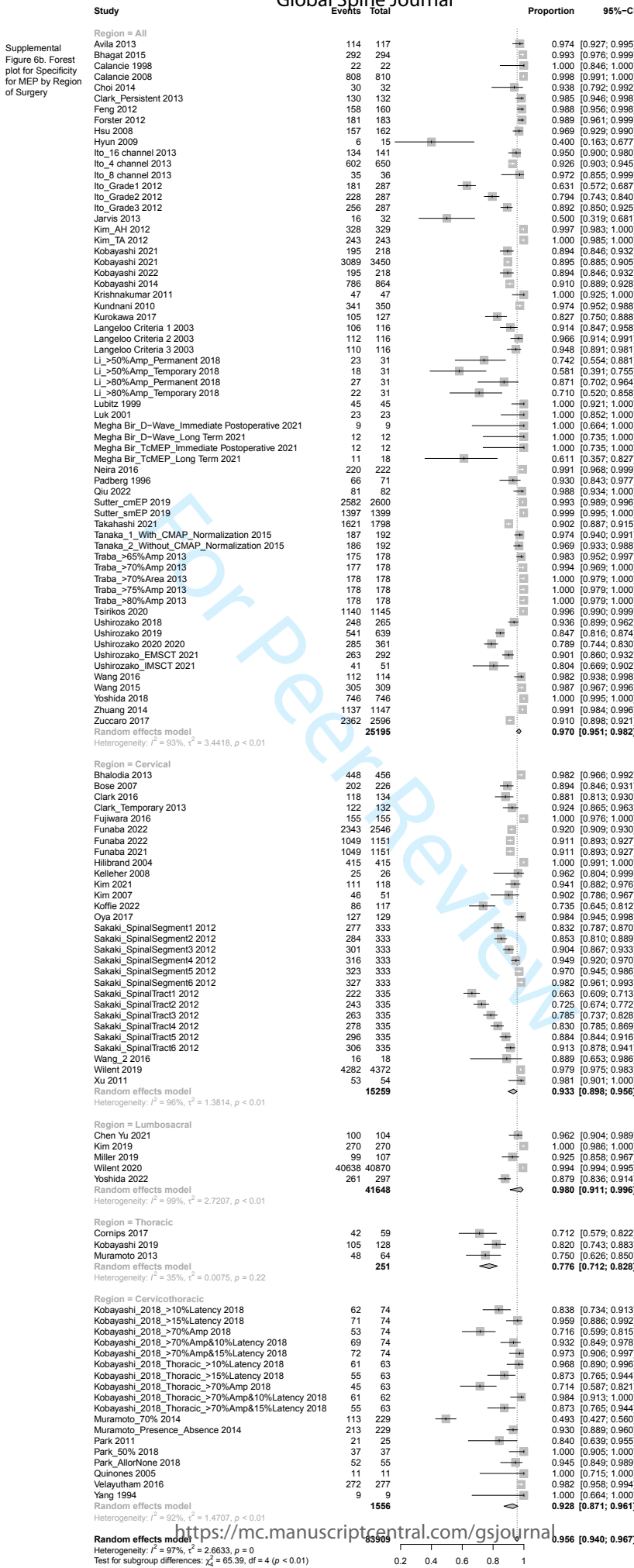


### Comparison of sROC for MEP by Different Pathology



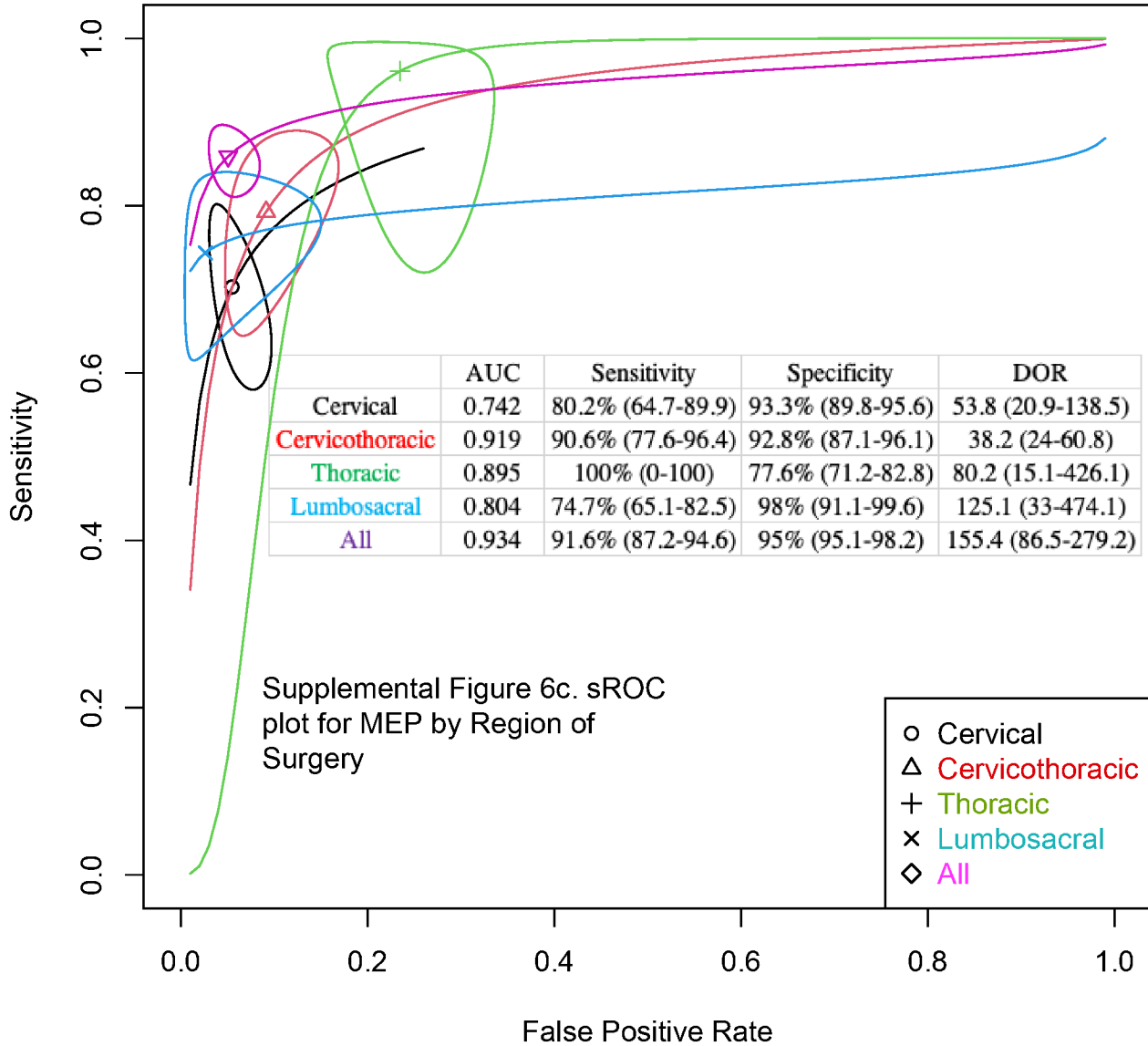




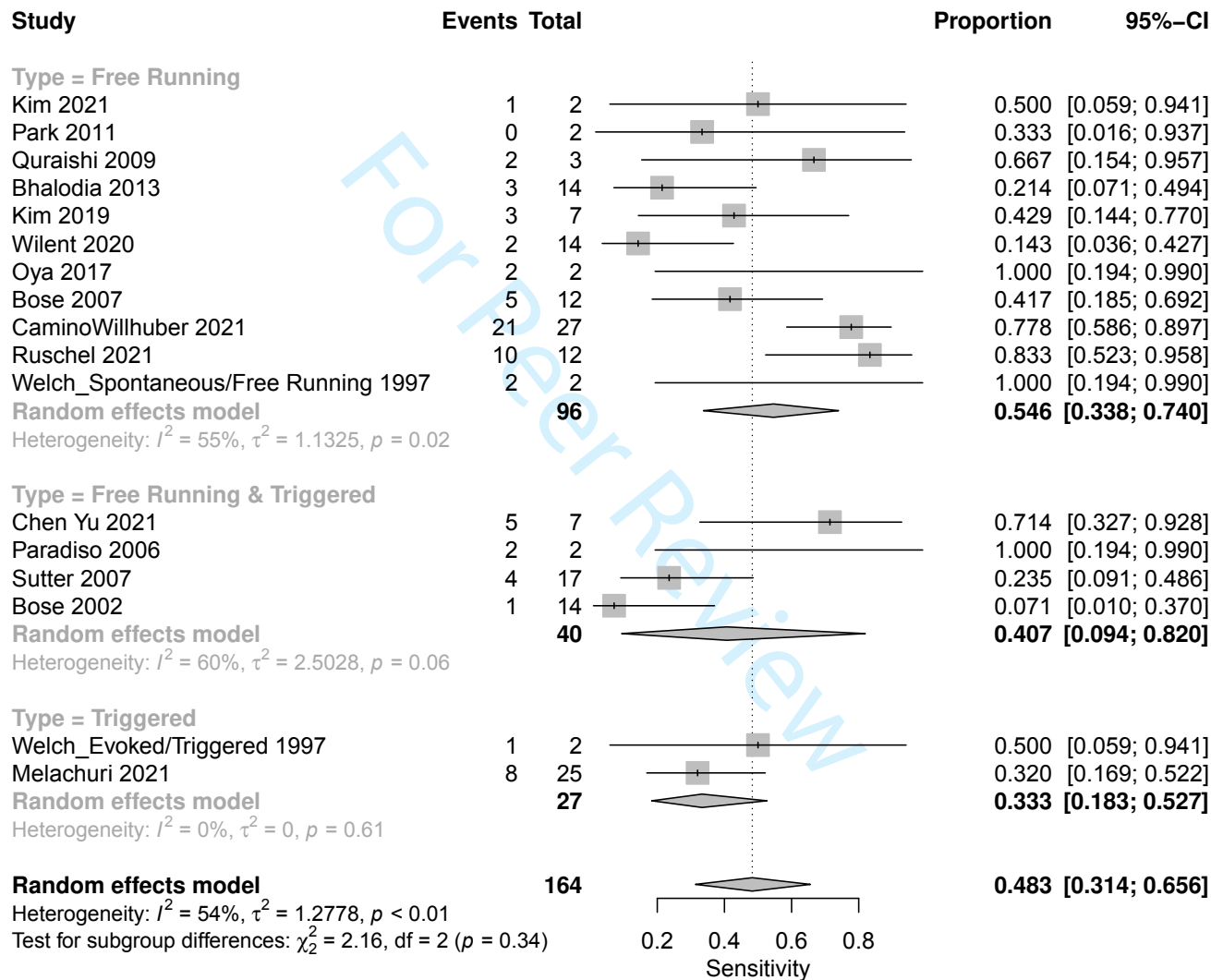


Supplemental Figure 6b. Forest plot for Specificity for MEP by Region of Surgery

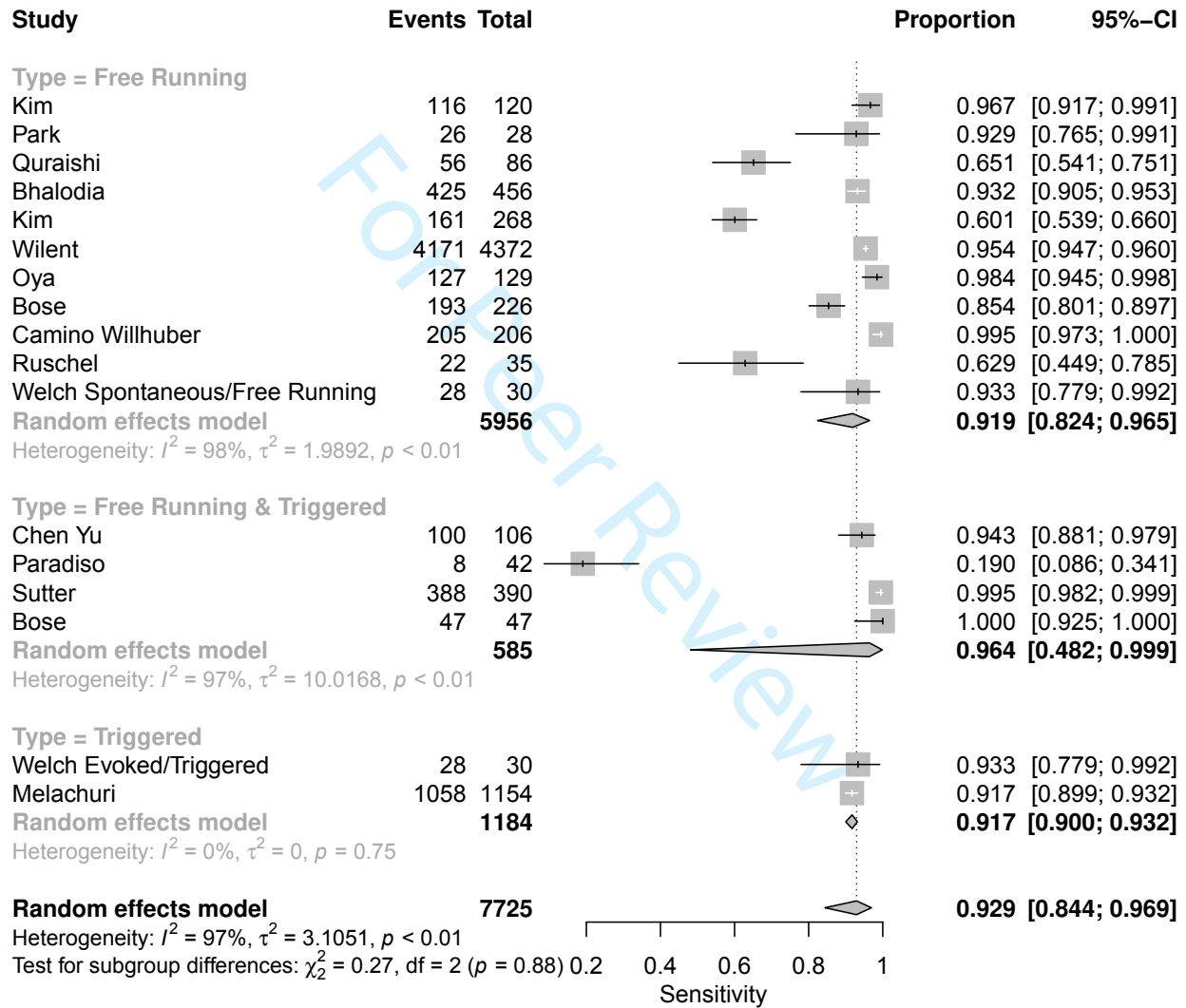
### Comparison of sROC for MEP by Different Region



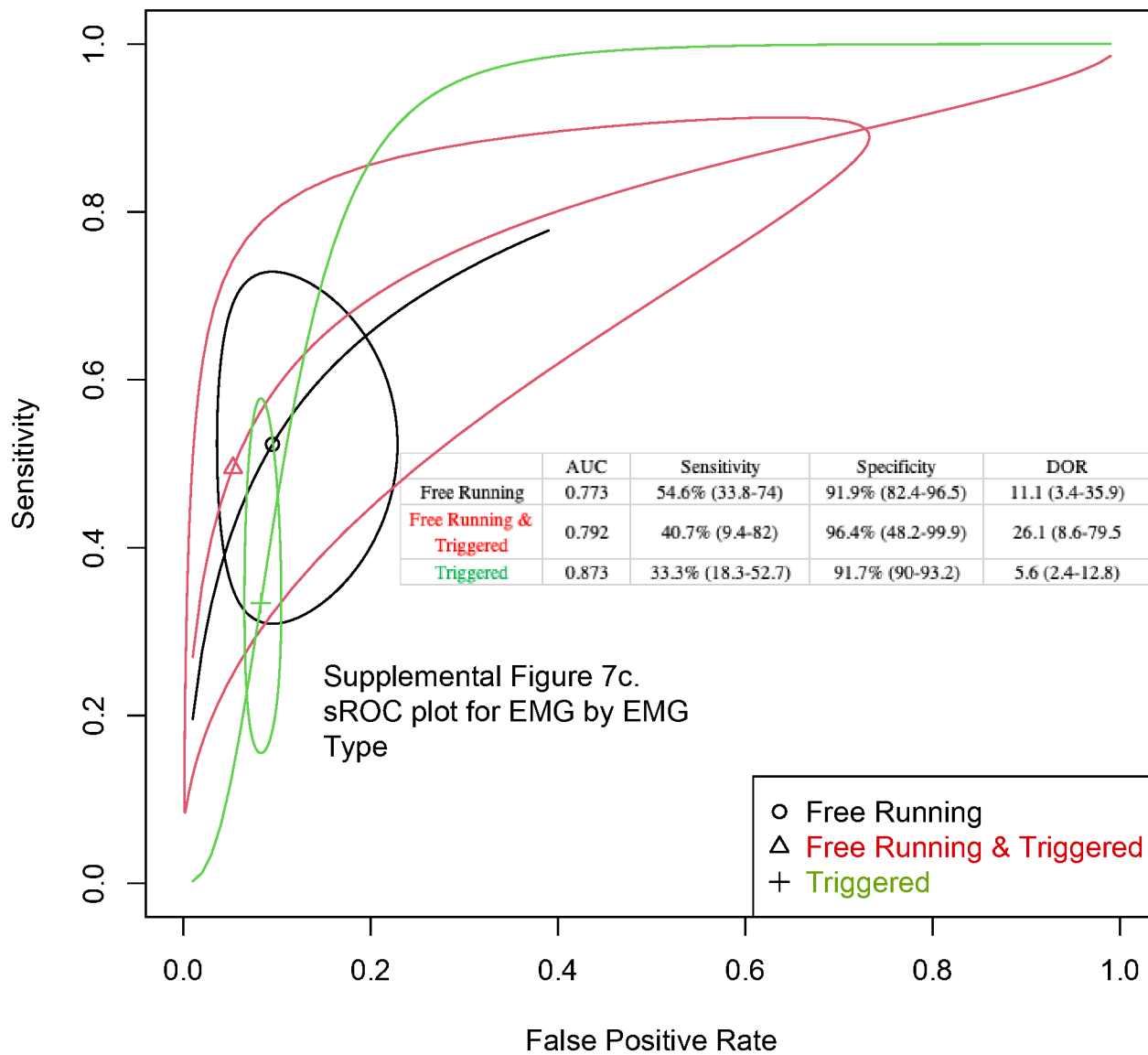
**Supplemental Figure 7a. Forest plot for Sensitivity for EMG by EMG Type**



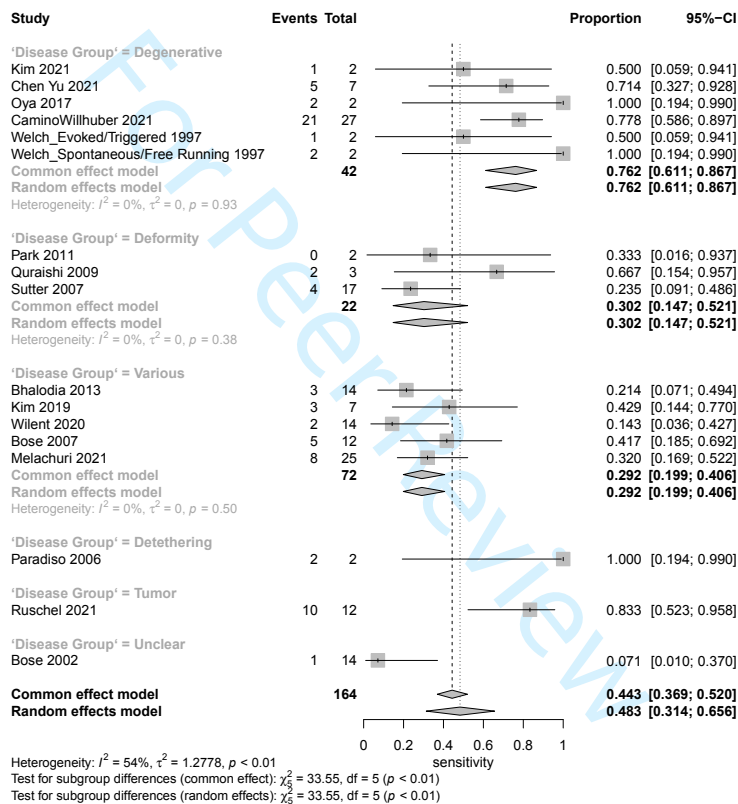
**Supplemental Figure 7b. Forest plot for Specificity for EMG by EMG Type**



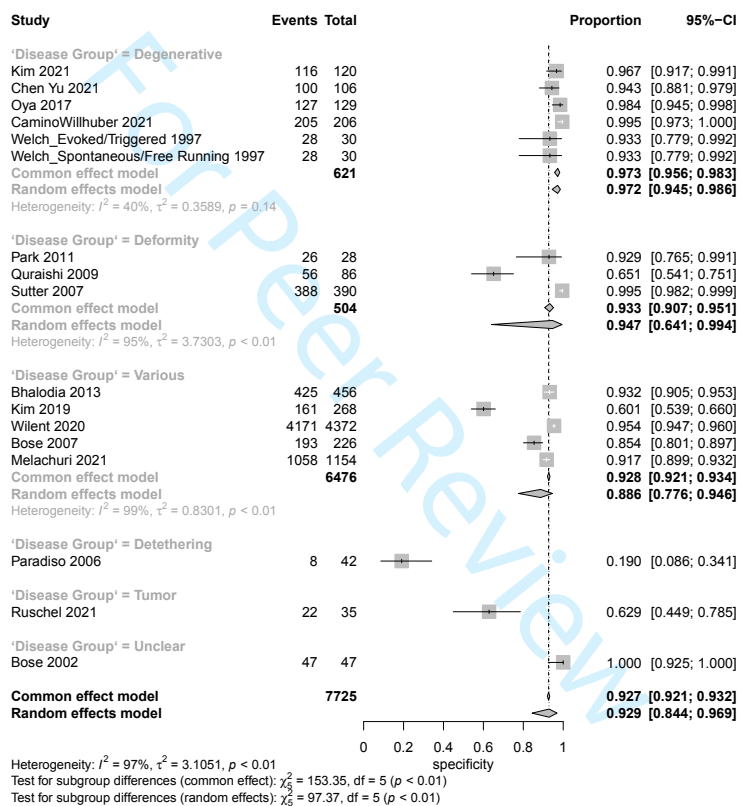
### Comparison of sROC for EMG by Different Type



Supplemental Figure 8a. Forest plot for Sensitivity for EMG by Disease Group

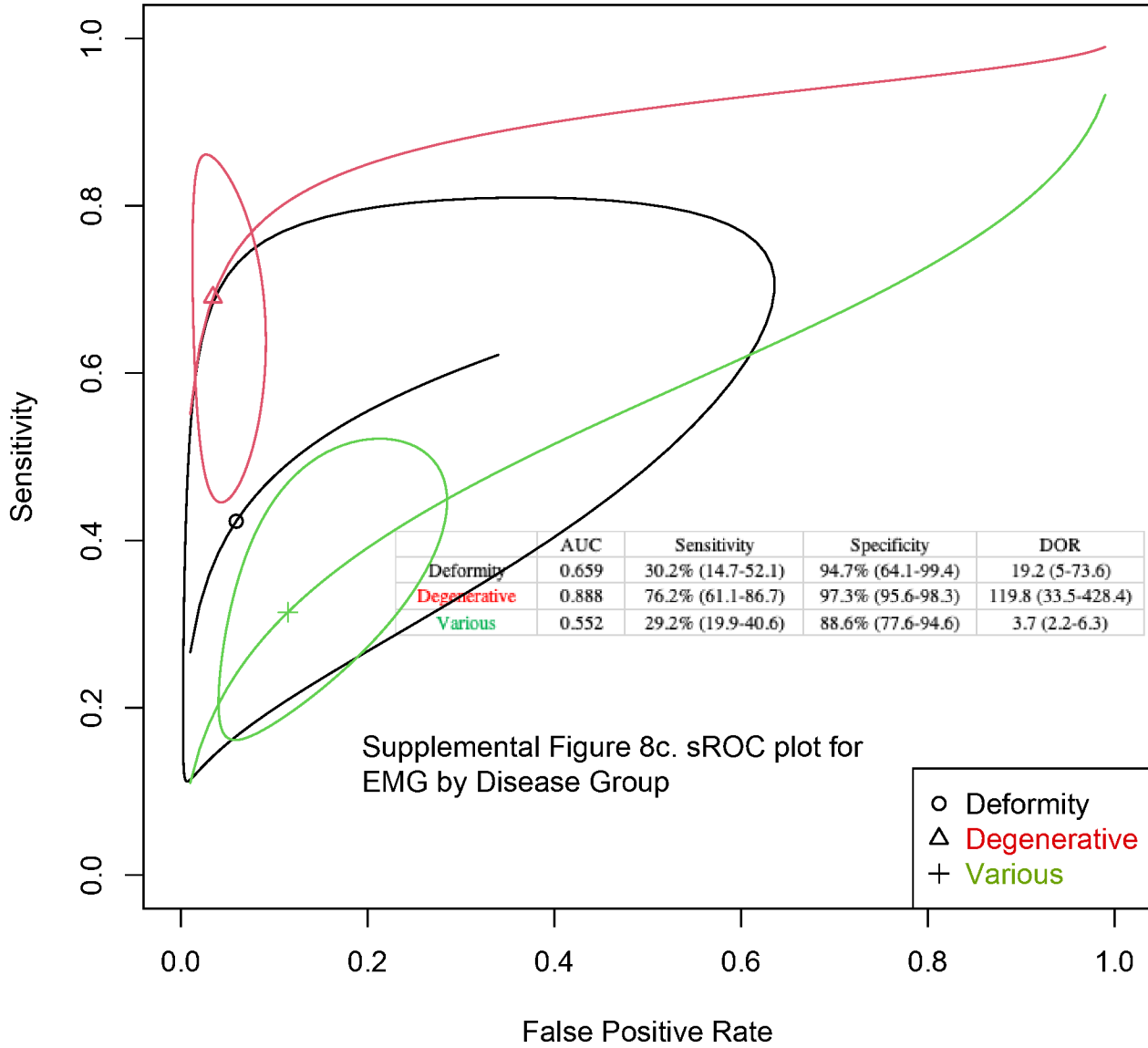


Supplemental Figure 8b. Forest plot for Specificity for EMG by Disease Group

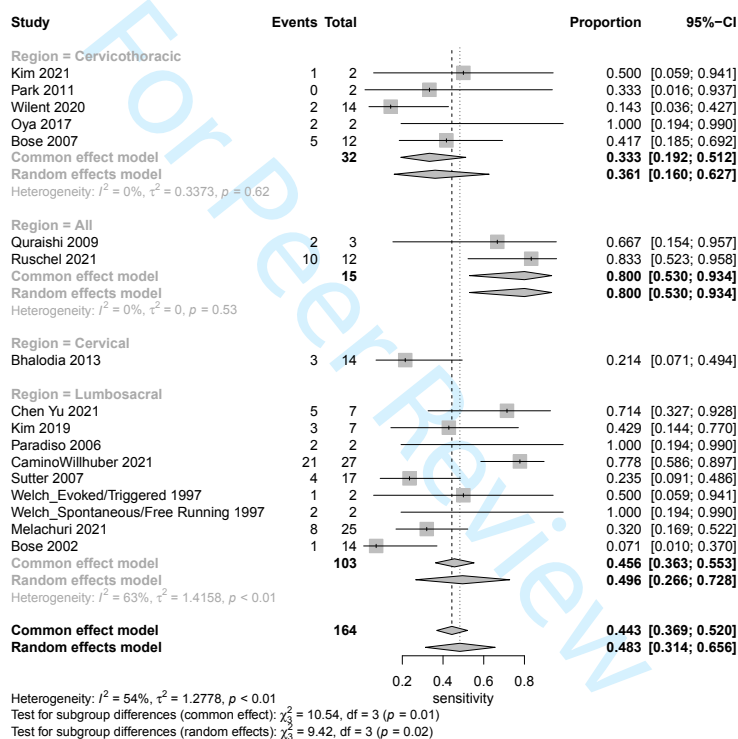




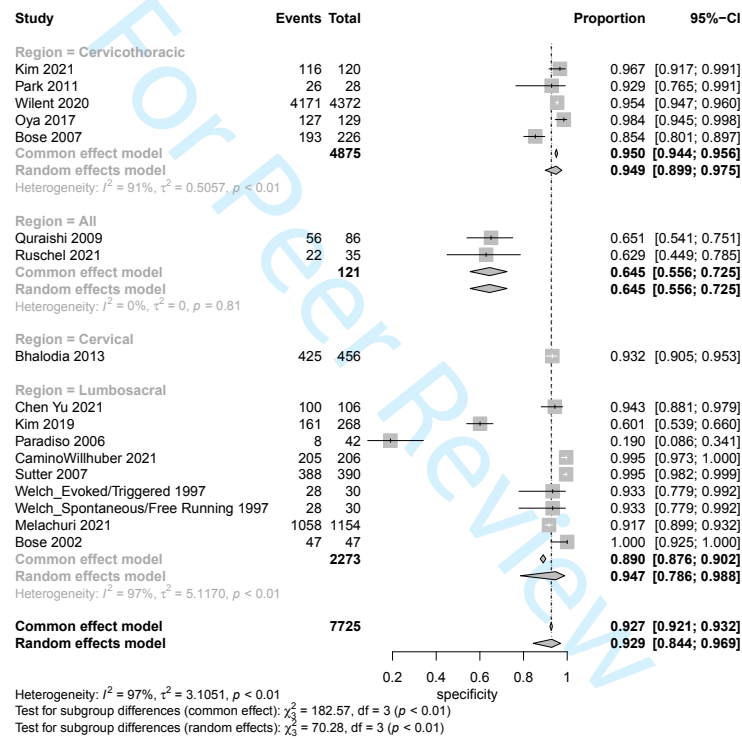
### Comparison of sROC for EMG by Indication



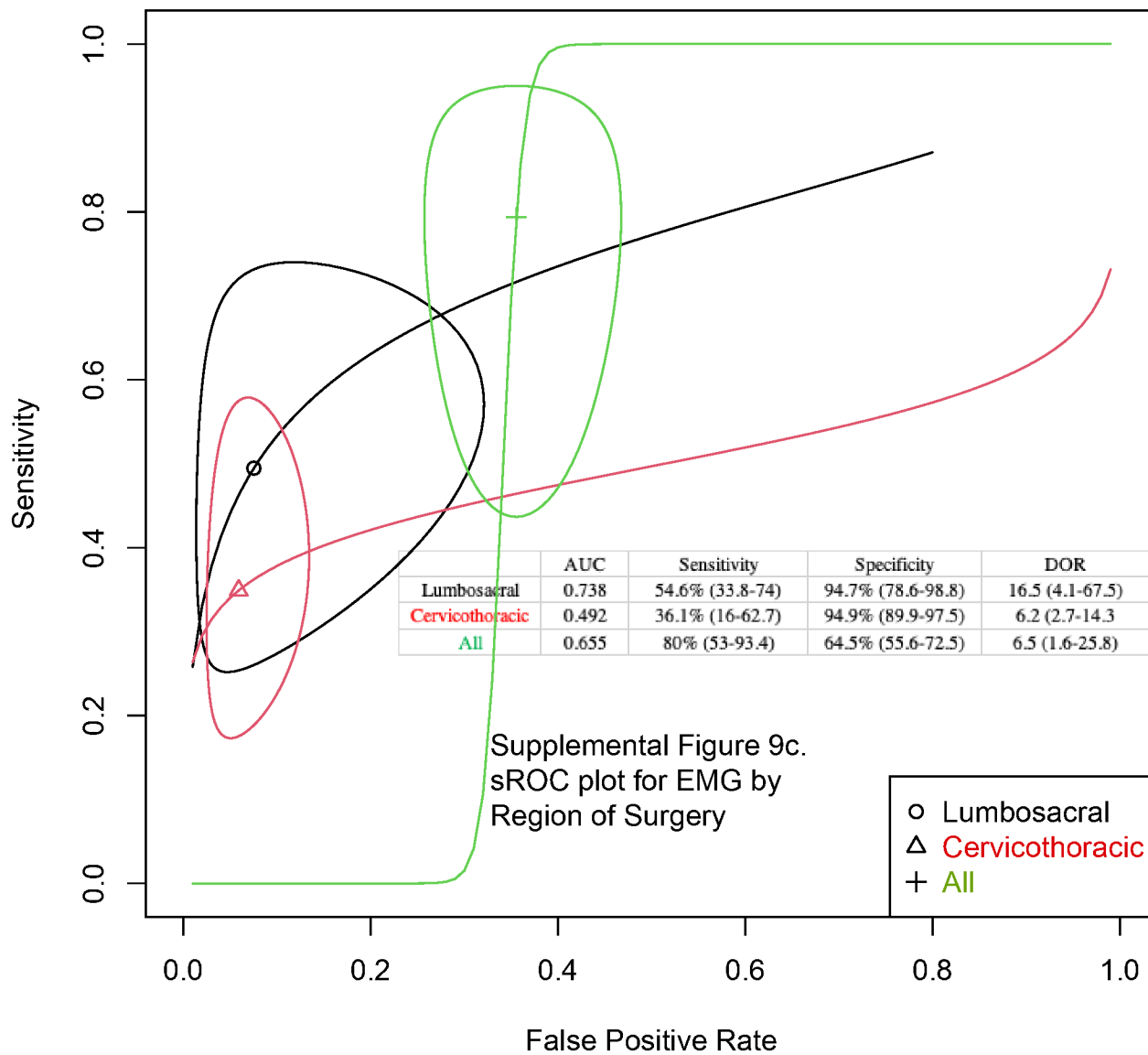
Supplemental Figure 9a. Forest plot for Sensitivity for EMG by Region of Surgery



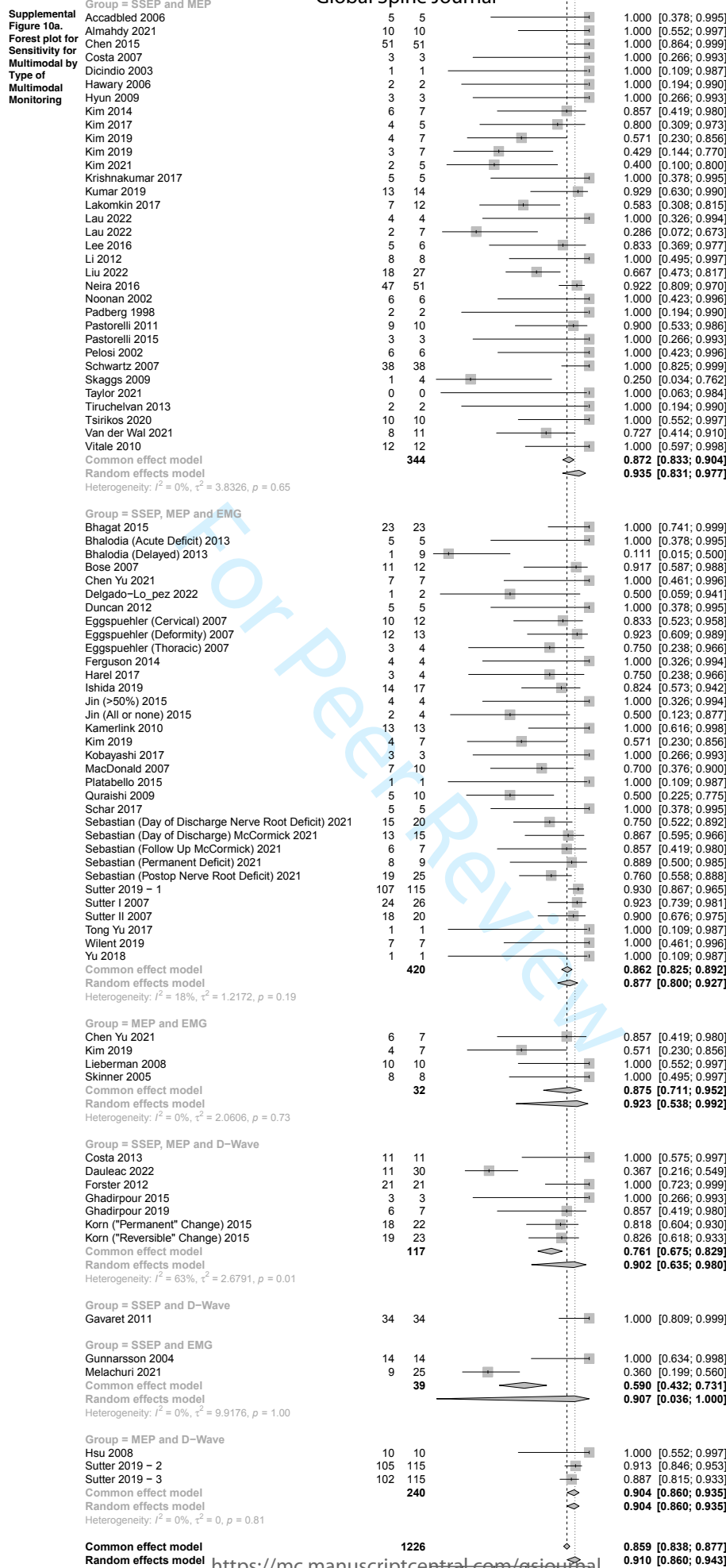
**Supplemental Figure 9b. Forest plot for Specificity for EMG by Region of Surgery**



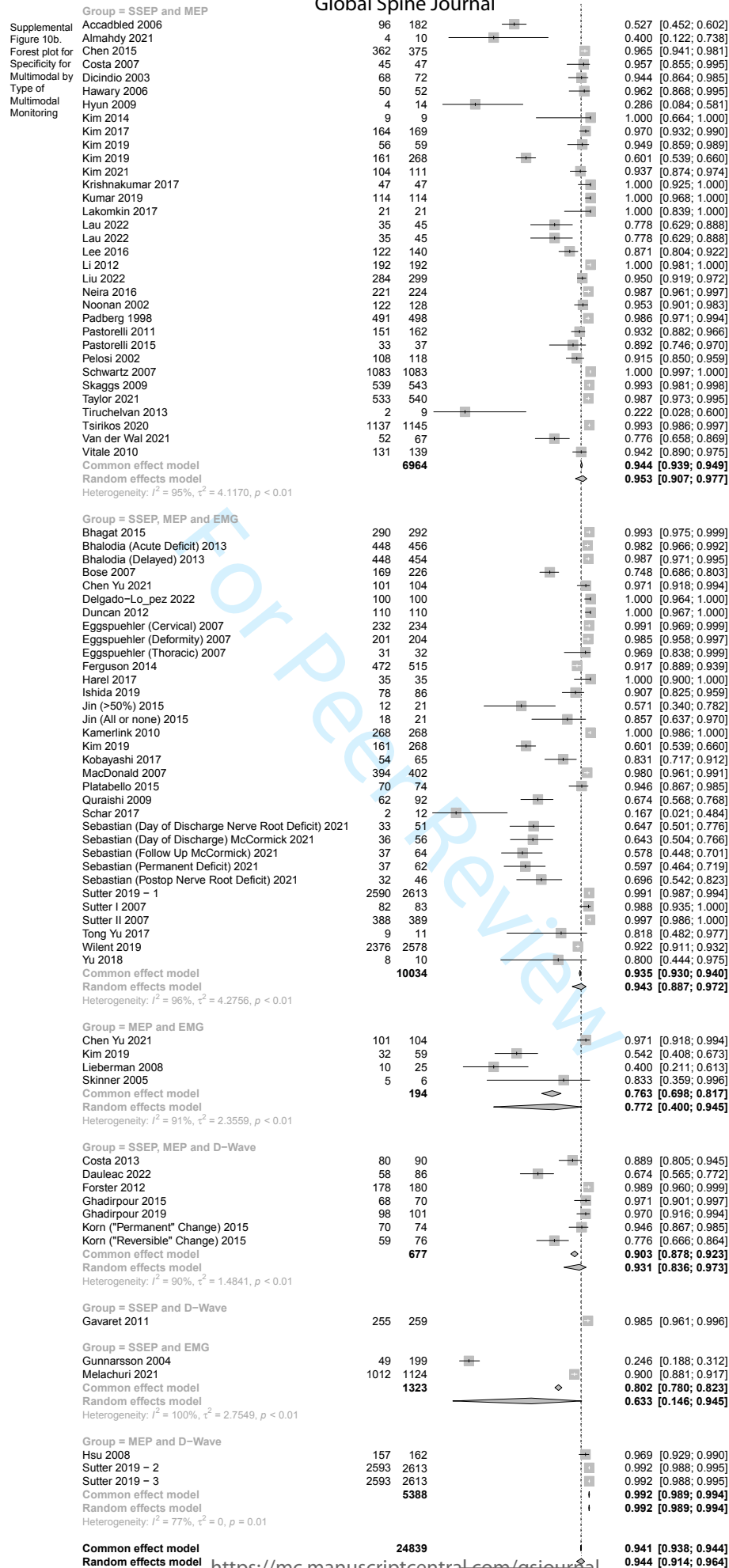
### Comparison of sROC for EMG by Different Region



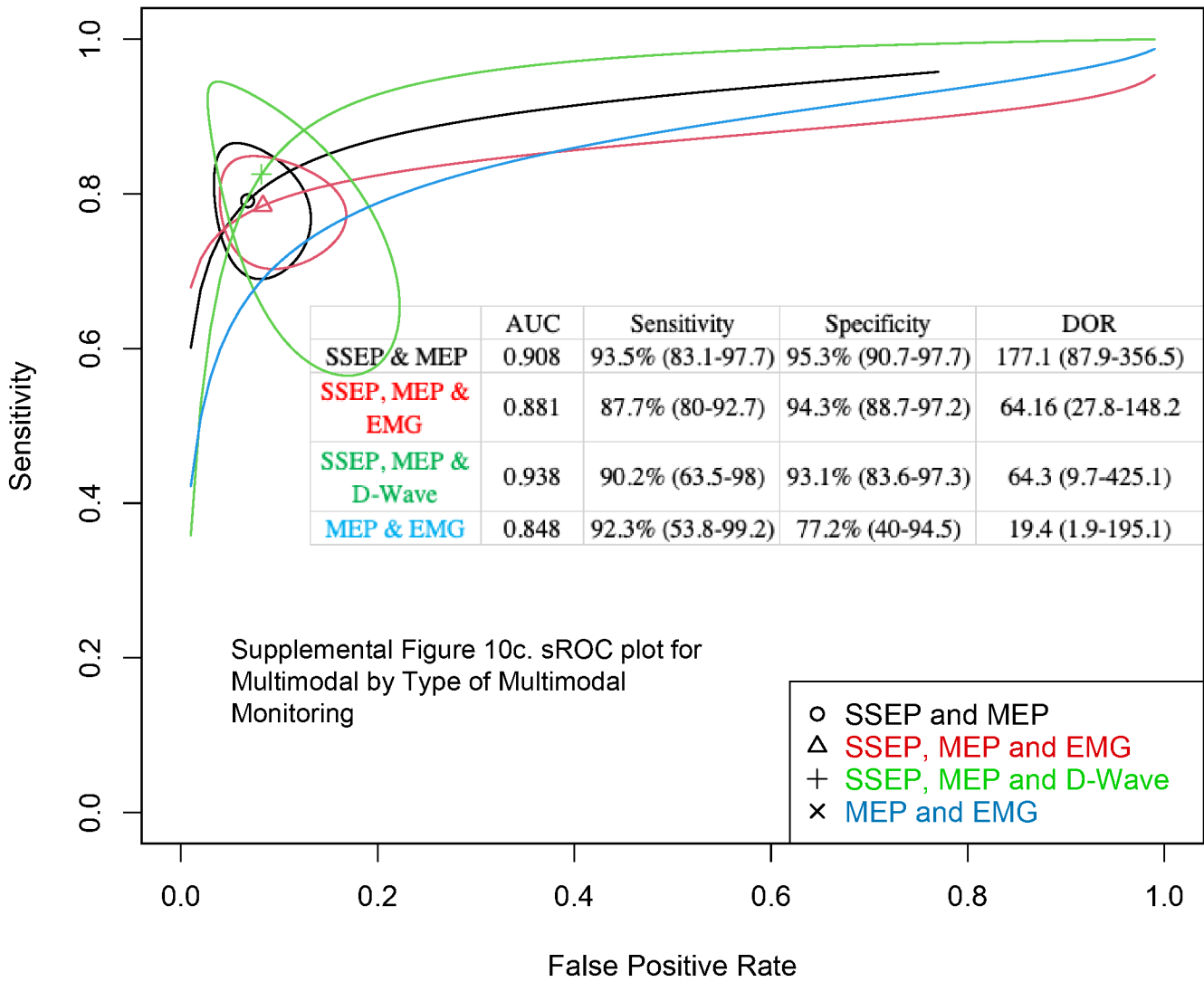
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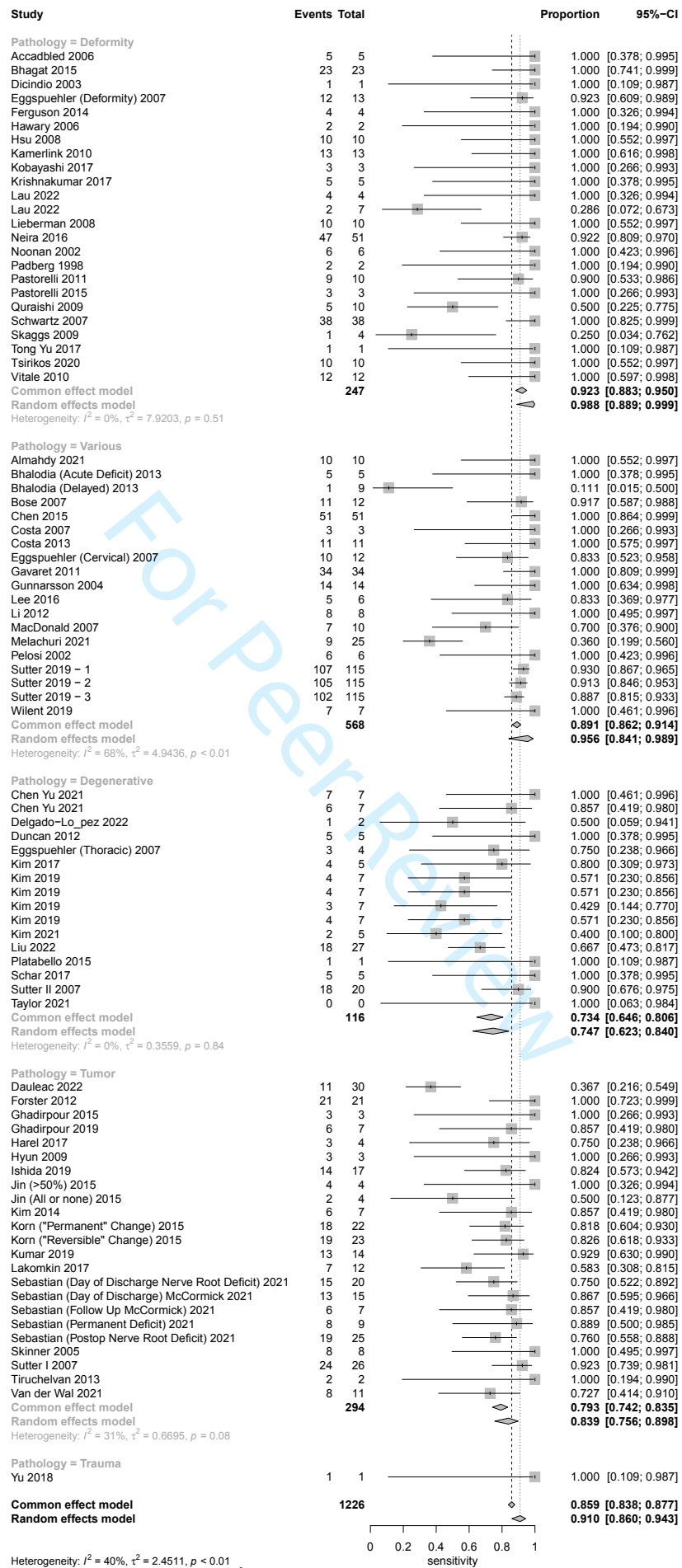


Heterogeneity:  $I^2 = 40\%$ ,  $\tau^2 = 2.4511$ ,  $p < 0.01$   
 Test for subgroup differences (common effect):  $\chi^2 = 32.21$ ,  $df = 6$  ( $p < 0.01$ )  
 Test for subgroup differences (random effects):  $\chi^2 = 1.46$ ,  $df = 6$  ( $p = 0.96$ )



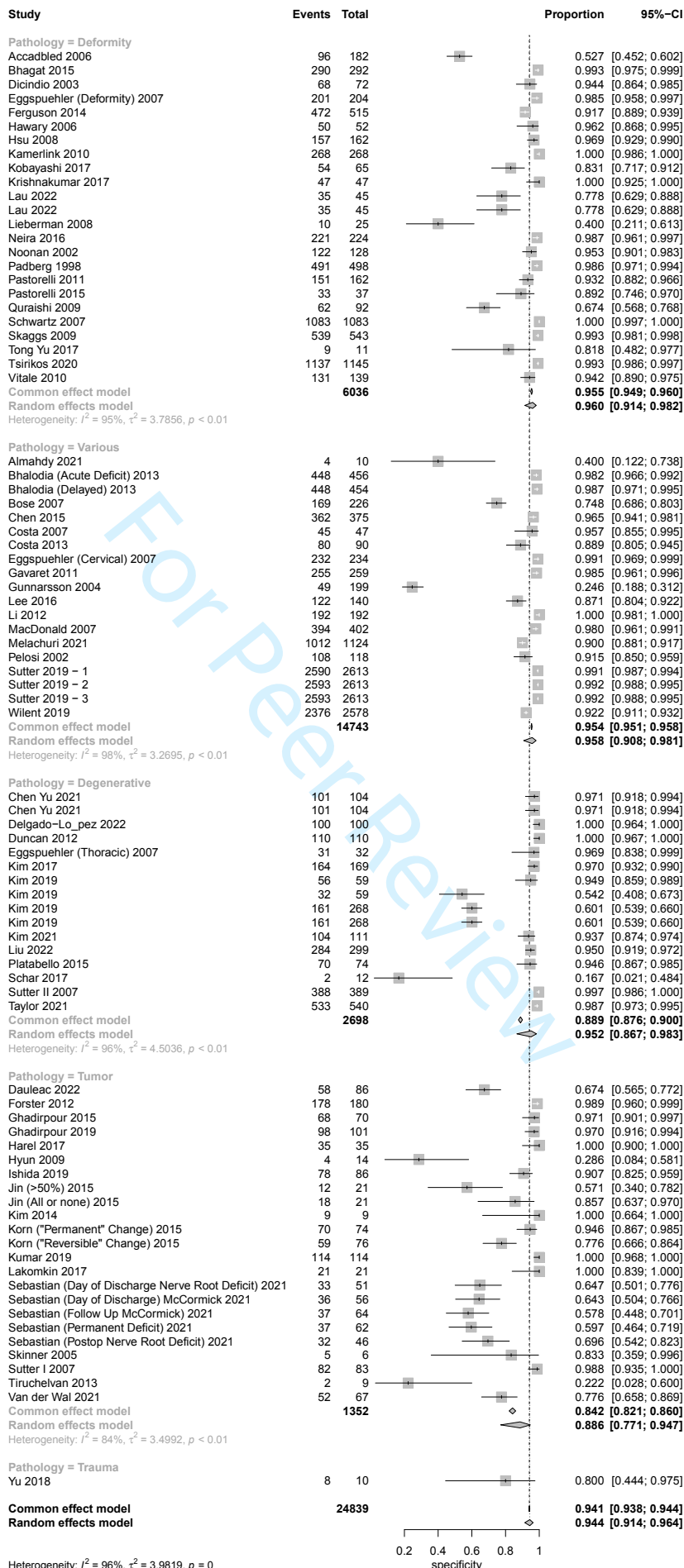
### SROC - Comparison of Different Multimodal Techniques





Heterogeneity:  $I^2 = 40\%$ ,  $\tau^2 = 2.4511$ ,  $p < 0.01$   
 Test for subgroup differences (common effect):  $\chi^2 = 36.51$ ,  $df = 4$  ( $p < 0.01$ )  
 Test for subgroup differences (random effects):  $\chi^2 = 12.90$ ,  $df = 4$  ( $p = 0.01$ )



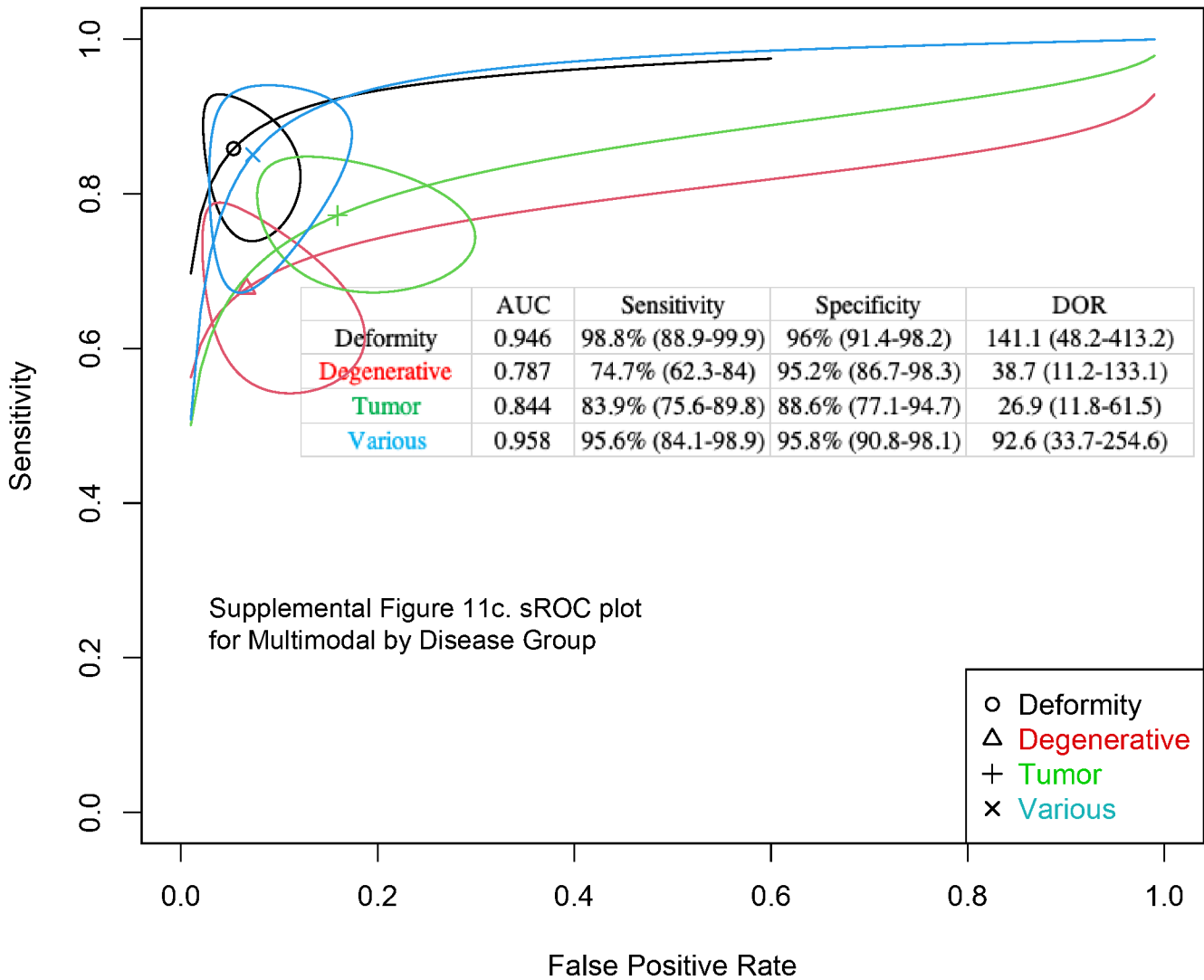


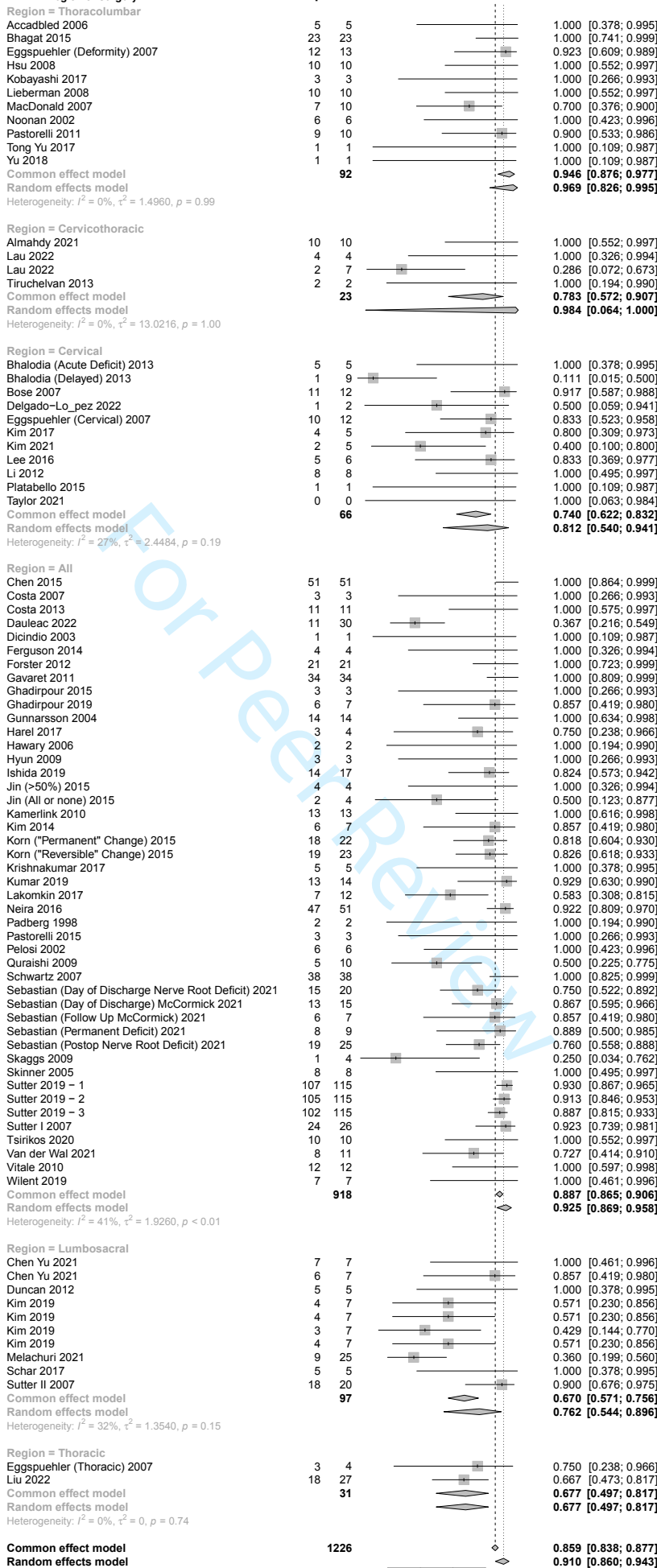
Heterogeneity:  $I^2 = 96\%$ ,  $\tau^2 = 3.9819$ ,  $p = 0$

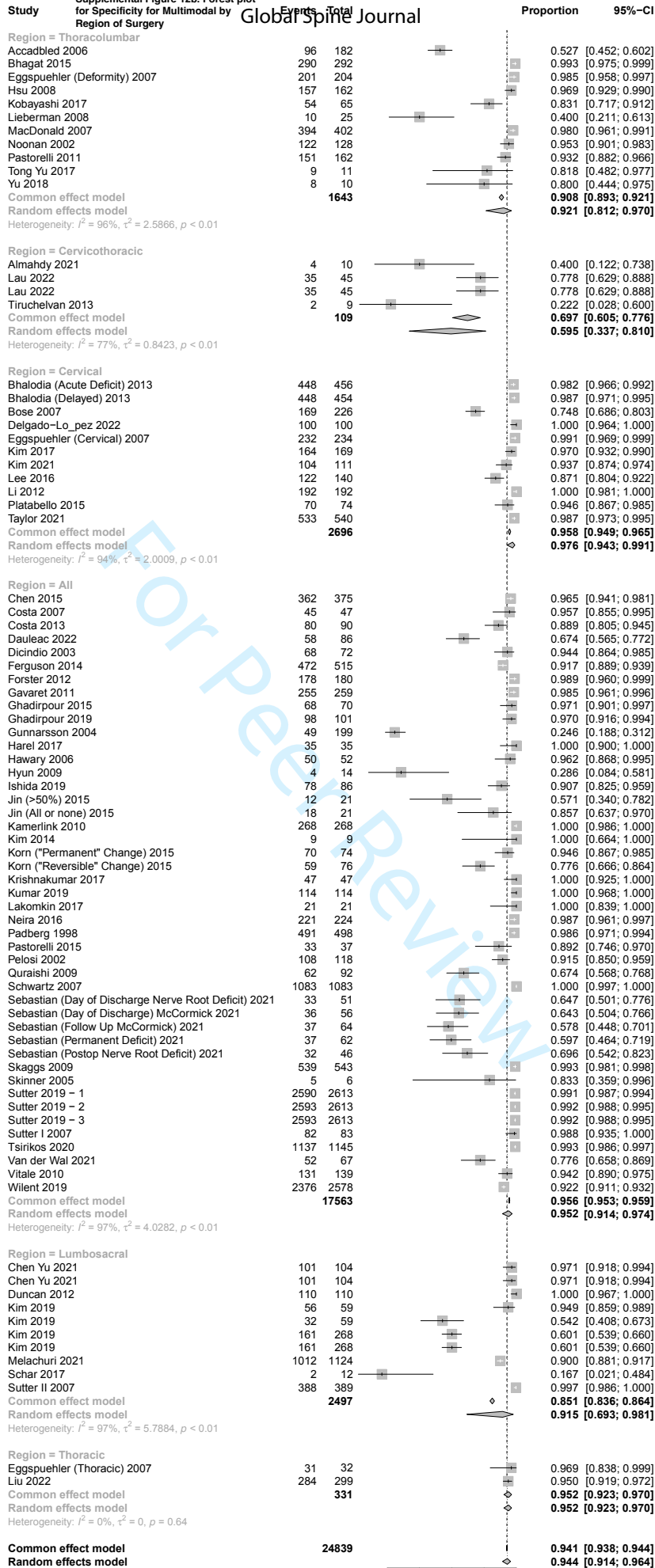
Test for subgroup differences (common effect):  $\chi^2 = 401.80$ ,  $df = 4$  ( $p < 0.01$ )

Test for subgroup differences (random effects):  $\chi^2 = 7.69$ ,  $df = 4$  ( $p = 0.10$ )

### SROC - Comparison of sROC for Different Pathology Groups







Heterogeneity:  $I^2 = 96\%$ ,  $\tau^2 = 3.9819$ ,  $p = 0$   
 Test for subgroup differences (common effect):  $\chi^2_5 = 517.21$ ,  $df = 5$  ( $p < 0.01$ )  
 Test for subgroup differences (random effects):  $\chi^2_5 = 25.11$ ,  $df = 5$  ( $p < 0.01$ )

### Comparison of sROC for Multimodal for Different Regions

