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Failure of a Carbon Fiber–Reinforced Polymer Implant Used for Transforaminal Lumbar Interbody Fusion

Lumbar interbody fusion is a common procedure owing to the high prevalence of degenerative spinal disorders. During such procedures, carbon fiber–reinforced polymer (CFRP) cages are frequently utilized to fill the void created between adjacent vertebral bodies, to provide mechanical stability, and to carry graft material. Failure of such implants can lead to significant morbidity. We discuss the possible causes leading to the failure of a CFRP cage in a patient with rheumatoid arthritis. Review of a 49-year-old woman who underwent revision anterior lumbar interbody fusion 2 years after posterior instrumentation and transforaminal lumbar interbody fusion at L4–L5 and L5–S1. The patient developed pseudarthrosis at the two previously fused levels with failure of the posterior instrumentation. Revision surgery reveled failure with fragmentation of the CFRP cage at the L5–S1 level. CFRP implants can break if mechanical instability or nonunion occurs in the spinal segments, thus emphasizing the need for optimizing medical management and meticulous surgical technique in achieving stability.

於經椎間孔腰椎椎體間融合術使用碳纖維增強聚合物種植入物故障

由於退變性脊柱疾病的高患病率，腰椎椎間融合是一個常用的手術程序。在手術過程中，碳纖維增強聚合物（CFRP）籠子經常用於填補相鄰椎體之間產生的空隙，以提供機械穩定性並攜帶移植物料。這種植入物的故障可導致顯著的發病及死亡率。我們將討論 CFRP 籠子在一個類風濕關節炎患者的發生故障的可能原因。回顧一個 49 歲的女人，她接受了 L4 - L5 和 L5 -S1 後路椎間孔腰椎椎間融合，2 年後再接受了翻修前路腰椎椎間融合。病人在兩個先前融合的節段出現假關節與後路融合故障。翻修手術發現了 CFRP 籠子的碎片在 L5 -S1 水平。如果機械不穩定或不癒合發生在脊髓節段會令 CFRP 植入物可以斷裂，從而強調優化醫療管理的需要和細緻的手術技術以達致穩定性。