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Investigations for bone surface damage during orthopedic bone drilling

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Orthopedic bone surgery is a curious topic for research in present medical engineering. Machining to bone is very necessary action to treat some major bone fracture. Machining to bone includes through holes, blind holes and sometime just finishing to the bone edges. This machining to the bone can damage the bone and its surroundings if execution is not in a proper manner. This damage may lead to failure of bone joint after some time when human tries to do his daily work, so to maintain the bone joint for long time machining damage should be controlled at the time of machining only. Major problem initiates with machining of bones are crack initiation and thermal damage. This study mainly focuses to maintain the forces exerted and surface damage to the bone during bone drilling with variation of drilling parameters. Using L9 orthogonal array optimized combination of parameters are suggested which gives less damage to the bone surroundings. SEM images of bone drilling surfaces helps to get the micro level information of bone damage.

Biography

Gurmeet Singh is currently a Research Scholar in Mechanical Engineering Department at Thapar University, Patiala-Punjab, India. He is working on bone drilling during orthopedic surgery. He has completed his Masters of Engineering in Mechanical Engineering from PEC University of Technology, Chandigarh, India. He has published 3 international journals and also presented papers at 4 international conferences. He is having 7 years teaching and research experience. His research area is focused on modern manufacturing, non-conventional machining and bone drilling.

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