

牙科铸造钴铬合金氩弧焊接后的力学性能分析

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【摘要】目的 研究牙科铸造用高熔钴铬合金氩弧焊接后的力学性能, 为临床口腔修复的应用提供实验依据。**方法** 用直径 2mm 蜡线, 常规包埋, 牙科铸造钴铬合金铸造长约 5cm 的金属段 20 根, 随机分成 2 组, 每组 10 根。A 组不做处理; B 组从中间切断, 用同材料做焊丝, 氩弧焊接。然后分别测试其维氏硬度 (HV10)、拉断力、屈服强度和延伸率等力学性能。**结果** 焊接后的牙科铸造钴铬合金的维氏硬度、拉断力、屈服强度和延伸率等, 几乎与未焊合金相同, 经 χ^2 计算, $P>0.05$ 。**结论** 氩弧焊接牙科高熔铸造钴铬合金的力学性能良好, 可考虑用于牙科铸造支架断裂焊接, 在金属支架上增加人工牙、高熔铸件缺陷修补以及圆锥形套筒冠外冠与支架的焊接等方面。

【关键词】 铸造钴铬合金 氩弧焊接 力学性能

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Analysis of mechanical properties of Co-Cr dental casting alloy after argon-arc welding

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【Abstract】Objective To study the mechanical properties of dental casting Co-Cr alloy after argon-arc welding, and to provide a theoretical basis for clinical application. **Methods** After conventional invest by using 2 mm wax string, 20 metal segments with 5cm in length were produced using dental Co-Cr alloy. They were randomly divided into 2 groups with 10 pieces in each group. The samples in group B was cut in the middle, using the same material and argon-arc welding. Group A, the samples without any treatment was used as the control group. Both groups were tested by Vickers-hardness (HV10), tensile force, yield strength and elongation. And the atomic structures of the welding zone were observed by the electron microscope. **Results** no statistically significant difference was observed in Vickers-hardness (HV10), tensile force, yield strength and elongation between two groups ($P>0.05$). **Conclusions** Dental casting Co-Cr alloy welded by argon-arc technique has good mechanical properties. It can be used for welding fractured casting framework, conical telescopic crown and frame.

【Key words】 Cast Co-Cr alloy Argon-arc welding Mechanical properties

牙科铸造钴铬合金在口腔修复中应用广泛, 主要用于活动托牙的铸造基托支架, 铸造冠桥, 附着体义齿支架部分, 圆锥型套筒冠义齿的内冠和外冠等, 其中可摘局部义齿是应用最广泛的一

种修复技术, 金属基托较塑料基托从异物感和语言方面似乎更适应患者的心理要求^[1-2]。近年来, 氩弧焊特别是手工钨极氩弧焊已经成为各种金属结构焊接中必不可少的焊接手段, 它几乎能焊接所有金属, 特别是一些难熔金属, 易氧化金属,

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