

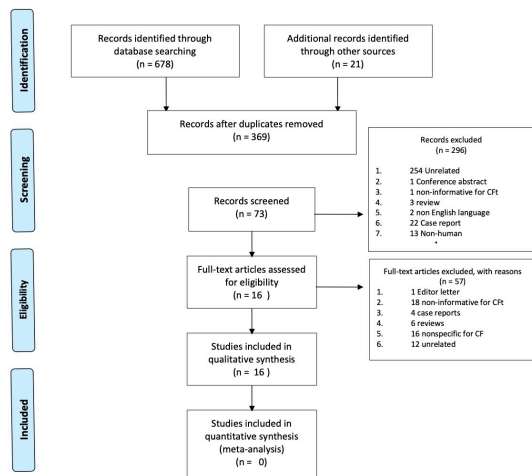
PEDIATRIC CONDYLAR FRACTURES TREATMENT: RECENT ADVANCES OVER THE LAST 10 YEARS

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Pediatric condylar fractures (PCFs) account from 28.2% to 72% of all mandibular fractures in children and adolescents. Nowadays, nonsurgical approach to PCFs has received a great consensus, with previous reports supporting the evidence of good clinical long-term outcomes avoiding surgical risks. Regardless of the degree of PCFs displacement and dislocation, the ability of a new condylar process to regenerate after closed treatment of condylar process fractures has been radiographically demonstrated in children <12 years at the time of injury. Aim of this study is to report modern advances over the last ten years in PCFs management.

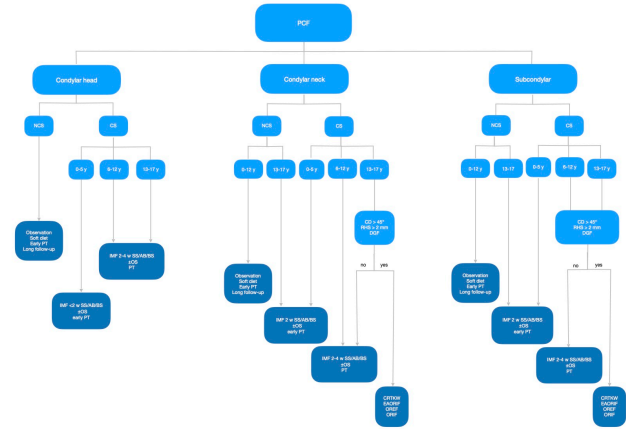
Methods

This systematic review was performed, on the basis of PRISMA guidelines, on PubMed, Embase, ScienceDirect, Scopus and Cochrane library, from 01/01/2010 up to 01/07/2019. Searched terms: ("mandibular" OR "mandible" OR "jaw") AND ("pediatric" OR "child" OR "children") AND ("condylar" or "condyle") AND ("fracture" OR "fractures"). Inclusion criteria: Study design: randomized, non-randomized, prospective, retrospective studies; Types of participants: patients aged between 0 and 18 years with mandibular condylar fracture; Type of intervention: The intervention was any type of therapeutic methods to manage CF; Follow-up: At least 3 months; Language: English language. Exclusion criteria: Animal studies; Literature reviews; Letters to editors, Case reports, case series were excluded scientific papers regarding pediatric mandibular fractures not specifics for condylar fractures. The following data were collected: first author, year of publication, country of the author, mean age, number of patients, number of fractures, treatment methods, follow-up, follow up methods, outcome measured. Cochrane risk of bias and MINORS tools were used.



Results

The search strategy in the databases resulted in 678 papers. After selection, a total of 16 articles were obtained for data extraction and analysis. Studies included 512 patients aged from 0.14 to 17 years old with an amount of 623 PCFs. We designed a flow chart to standardize PCFs treatment.



Discussion

Lekven et al. (2011) reported complete radiological remodeling in 47 PCFs, moderate in 5, and poor in 2 non-surgically treated with 31 favorable and 11 unfavorable outcomes. Leuin et al. (2011) analyzed Helkimo Index of TMJ dysfunction in 45 patients with 55 PCFs managed medically: 15 none, 6 mild, and 24 severe. Ben Bassat et al. (2012) found a higher prevalence of malocclusion in 32 subjects with 43 PCFs treated with FKT. Boffano et al. (2012) treated 14 children affected by unilateral displaced PCFs with splints, elastic IMF and FKT obtaining complete recovery. Wu et al. (2012) analyzed retrospectively 13 patients with 20 isolated displaced/dislocated PCFs treated conservatively obtaining satisfactory results. Schiel et al. (2013) reported normal occlusion and pain-free unrestricted TMJ in 6 patients with 9 severely displaced condylar base and neck PCFs undergoing transoral endoscopically assisted ORIF. Tabrizi et al. (2013) compared rigid IMF and guiding elastic for treatment of 31 patients affected by PCFs reporting same clinical results. Zhang et al. (2014) reported excellent long-term clinical and radiologic outcomes in 5 children with severely dislocated neck or base PCFs with ORIF using bioabsorbable miniplates. Zhao et al. (2014) treated 40 children and adolescents affected by PCFs with a removable occlusal splint and FKT with clinically satisfactory results. Liu et al. (2014) treated 30 children affected by 37 sagittal PCFs with splints reporting excellent clinical outcome in 20 patients, full radiological remodeling in 19. Kim et al (2015) treated displaced or dislocated unilateral PCFs in 11 children using threaded Kirschner wire and external rubber traction achieving in all patients normal occlusion and pain-free TMJ function. Ghasemzadeh et al. (2015) obtained satisfactory results treating 92 PCFs in 64 patients with conservative approach. Theologie-Lygidakis et al. (2016) reported good healing in all patients except 82 of 84 patients with 106 PCFs treated 80 cases non-surgically and with FKT, with an additional intra-occlusal block placed in 19, 4 with ORIF. Farber et al. (2016) described silk sutures IMF in 5 patients with 3 unilateral neck PCFs, 1 bilateral head PCFs, and 1 unilateral fracture of the head. Cascone et al (2017) treated 21 pediatric patients with open reduction and external fixation affected by 16 monolateral PCFs, 5 bilateral PCFs reporting good recovery. Liu M et al. (2019) reported reduction in 70.8% of TMJ anterior disc displacement and condylar remodeling in 20 patients with 24 sagittal PCFs with closed treatment.

Conclusion

Conservative approach is PCFs treatment of choice. Other acceptable options are: closed reduction, open transoral reduction and internal fixation with resorbable or titanium plates and screws under endoscope guidance.