



TREATMENT OF PROGRESSIVE HEMIFACIAL ATROPHY (PARRY-ROMBERG SYNDROME) WITH POLYMETHYL METHACRYLATE: A CASE REPORT.

Roberto Chacur	MD, Surgeon, Leger Clinic, Rio de Janeiro, Brazil
Honório Sampaio Menezes	MD, PhD in medicine, Leger Clinic, São Paulo, Brazil
Nívea Maria Bordin da Silva Chacur	MD, Leger Clinic, Rio de Janeiro, Brazil
Danuza Dias Alves	MD, Leger Clinic, Porto Alegre, Brazil
Rodrigo Cadore Mafaldo	MD, Surgeon, Leger Clinic, Porto Alegre, Brazil
Leandro Dias Gomes	MD, Surgeon, Leger Clinic, Porto Alegre, Brazil
Gisele dos Santos Barreto	Biomedical Scientist, Leger Clinic, Porto Alegre, Brazil Leger Clinic, Rio de Janeiro, Brazil

ABSTRACT Progressive hemifacial atrophy, also called Parry-Romberg Syndrome (PRS), is a craniofacial disorder that typically involves the subcutaneous layer of one side of the face. This article reports a case of a patient treated with polymethylmethacrylate for tissue augmentation and facial volume recovering asymmetry. Polymethylmethacrylate is effective and safe for treating progressive hemifacial atrophy and can lead to a good aesthetic result.

KEYWORDS : facial asymmetry; facial aesthetic; polymethylmethacrylate; Parry-Romberg Syndrome

Introduction

The Parry-Romberg Syndrome was first described by Parry in 1825 and Bergsohn in 1837, and was further studied by Romberg in 1846. The term progressive hemifacial atrophy was proposed by Eulenberg in 1871.¹

The cause of this rare disease is unknown. Pathogenic factors such as autoimmunity, trigeminal nerve abnormalities, cervicofacial trauma or infections have been suggested. The disease is characterized by atrophy of tissues of one side of the face, and involves dermatomes of one or multiple branches of the 5th cranial nerve.²

The treatment aims to correct the anesthetic aspect of the patient. Several techniques have been used including autologous lipotransfer³ or injection of filler substances such as hyaluronic acid⁴, poly lactic acid⁵ or liquid silicone⁶.

The present article reports a case of Parry-Romberg syndrome using Polymethyl methacrylate filler as a treatment option. PMMA is an injectable filler of polymethylmethacrylate nonabsorbable microspheres in hydroxypropyl methylcellulose used for soft tissue augmentation

Case Report

Patient J.N.L.N., a 20-year-old female from Porto Alegre, in July 2011 came for treatment of Becker's Nevus above the left breast. Clinical examination revealed a healthy woman with normal vital signs and systemic presentation. There were no symptoms of neurological disturbances, and her vision was normal. There was no history of family members with similar complaints, and no incidences of trauma or infection were observed. The face was asymmetric due to a right-sided deformity. A diagnosis of hemifacial atrophy was given and a Polymethyl methacrylate filler treatment was proposed. A written informed consent was taken after having a detailed discussion on the pros and cons of the procedure including the full details about the filler to be used, expected longevity of results, its approval status, possible side effects and the cost.

Treatment

The treatment consisted of three injection sessions of PMMA-

microspheres (12,5mL of PMMA 10% and 16,2 mL PMMA 30%). The filler was injected into the right maxillary and zygomatic region, lower eyelid, nasolabial folds, labiomental crease, mental and mandibular area along one year. The procedures were performed under local anesthesia (1% lidocaine) using microcannulas to inject PMMA, avoiding nerve and vascular lesions. No immediate adverse effects such as erythema, asymmetry, bumpiness, lumpiness, anaphylaxis, edema, acneiform eruptions were observed. In July 2014, three years follow-up, no incidence of late complications such as inflammatory nodule, allergic reactions, vascular occlusion and granulomas were seen. This technique leads to an optimal aesthetic result correcting the right hemifacial atrophy (Fig. 1). There were no scars, since the procedure is minimally invasive, enabling a quick recovery and avoiding hospitalization or limiting usual activities.

Discussion

The treatment of Parry-Romberg aims basically to correct the aesthetic aspect. Several therapeutic alternatives have been proposed.⁷ One of the techniques used for the correction of hemifacial atrophy is cosmetic dermatologic surgery with autologous fat grafting.³ However, this technique does not allow prediction of absorption of implanted material and consequent loss of volume.⁸ Since it is a more invasive method, it requires hospitalization, general anesthesia and a longer recovery time, which limit its use. The use of hyaluronic acid filling may result in inflammatory reactions in the injected region or in other organs, loss of skin texture, and reabsorption.⁹ The use of poly lactic acid for correction of defects has also some limitations, due to the number of applications required to achieve the expected result, its high cost and temporary results.⁵ Methods using liquid silicone for soft tissue augmentation are highly discussed. According to the literature, complications related with silicone injection may appear after a few years. There are some reports on the use of a small amount of purified, high viscosity silicone oil. However, there are no consistent studies on this treatment, so further investigation is necessary to evaluate risks and benefits on the use of silicone.⁶ In the present case, using polymethylmethacrylate filler, showed optimal results and permanent correction of deformity, with only subtle adjustments needed. This reconstruction technique can be performed in outpatient facility, with no need for hospitalization

and minimal local intervention. PMMA was used worldwide over 250,000 patients (2005 data), only 0.01% have granuloma formation.^{10,11} PMMA is an effective biocompatible filler having immediate results and long lasting effects.¹²

Our experience with the use of PMMA in other parts of the body¹³⁻¹⁸ led us to use PMMA to balance facial volume.

This is the first report in the international literature of the use of PMMA exclusively, with no orthodontic technique, to treat Parry-Romberg Syndrome.

Conclusion

Polymethylmethacrylate is effective and safe for treating progressive hemifacial atrophy and can enhance a good aesthetic result. The treatment showed long term efficacy (9 years follow up).

Consent

Written informed consent for publication of the clinical details was obtained from the patient. The ethics review board provided the approval to publish this case report.

Conflict interest

None declared.



Figure 1 - Images before and after the treatment.

REFERENCES

- Alemá, G., P. Benassi. 1952. Emiatrofia facial progressiva com hemiparesia e epilepsia Jacksoniana contralateral. *Rev. Neurol.* 22:615.
- Al-Niami F, Taylor JA, Lyon CC. Idiopathic hemifacial atrophy treated with permanent polyacrylamide subdermal filler. *Dermatol Surg.* 2012 Jan;38(1):143-5.
- Castro-Govea Y, De La Garza-Pineda O, Lara-Arias J, Chacón-Martínez H, Mecott-Rivera G, Salazar-Lozano A, Valdes-Flores E. Cell-assisted lipotransfer for the treatment of Parry-Romberg Syndrome. *Arch Plast Surg.* 2012;39(6):659-62.
- Bugge H, Negaard A, Skeie L, Bergersen B. Hyaluronic acid treatment of facial fat atrophy in HIV-positive patients. *HIV Med.* 2007;8(8):475-82.
- Sterling JB, Hanke CW. Poly-L-lactic acid as a facial filler. *Skin Therapy Lett.* 2005;10(5):9-1.
- Chasan PE. The history of injectable silicone fluids for soft-tissue augmentation. *Plast Reconstr Surg.* 2007;120(7):2034-40.
- Baek R, Heo C, Kim BK. Use of various free flaps in progressive hemifacial atrophy. *J Craniofac Surg.* 2011;22(6):2268-71
- Duymaz A, Karabekmez FE, Keskin M, Tosun Z. Parry-Romberg Syndrome: facial atrophy and its relationship with other regions of the body. *Ann Plast Surg.* 2009;63:457-61
- Coleman WP 3rd. Fat transplantation. *Dermatol Clin.* 1999;17:891-8
- Gelfer A, Carruthers A, Carruthers J, Jang F, Berstein S. The natural History of Polymethylmethacrylate Microspheres Granulomas. *Dermatol Drug.* 2007;33:614-20.
- Carruthers A, Carruthers J. Polymethylmethacrylate Microspheres / Collagen as an tissue augmentation agent: Personal experience over 5 years. *Dermatol Surg.* 2005;31:1561-4.
- Soares FM, Costa IM. HIV-Associated facial lipoatrophy: from the advent to current knowledge. *An Bras Dermatol.* 2011;86(6):1247.
- Chacur, R., Menezes H., Bordin, N., et al. Replacement of gluteal implants by polymethyl methacrylate filler: case report. *Plastic Surg Hand Surg.* 2019; 6:11-94. Doi:10.1080/23320885.2018.1549946.
- Chacur, R., Menezes H., Bordin, N., et al. Correction of Poland Syndrome (Chest Hypoplasia) Using Polymethylmethacrylate Implant. *Biome Sci Tech Res.* 2019; 14(1):10405-10408. Doi: 10.26717.BJSTR.2019.14.002493.
- Chacur, R., Menezes H., Bordin, N., et al. Aesthetic correction of lesion by postliposuction corticoid infiltration using subcision, PMMA filling, and CO2 laser. *Plastic Surg Hand Surg.* 2019; 6:11-94. Doi: 10.1080/23320885.2019.1602837
- Chacur, R., Menezes H., Bordin, N. et al. Gluteal Augmentation with Polymethylmethacrylate: A 10-year Cohort Study. *Plast Reconstr Surg.* 2019; 7(5): e2193. Doi: 10.1097/GOX.00000000000002193
- Chacur, R., Menezes H., Alves D., et al. Cellulite treatment using subcision and polymethyl methacrylate filling (Goldincision®): case report. *Ind J. Appl Res* 9(9) Sept 2019. Doi: 10.36106/ijar
- Chacur, R., Menezes H., Bordin, N. et al. Treatment for neck laxity with PMMA filling, microfocused ultrasound, and radio frequency CO2 laser: case report. *Ind J. Appl Res* 9 (10) Oct 2019 | PRINT ISSN No. 2249 - 555X | DOI:10.36106/ijar