

Année 2020/2021

N°

Thèse

Pour le

DOCTORAT EN MEDECINE

Diplôme d'État

par

Gauthier CALLUAUD

Né le 03/04/1991 à BORDEAUX (33)

Prise en charge chirurgicale du syndrome de l'orbite énuclée ?

Une étude pronostique rétrospective

Présentée et soutenue publiquement le **01 juin 2021** devant un jury composé de :

Président du Jury :

Professeur Boris LAURE, Chirurgie Maxillo-Faciale et Stomatologie, Faculté de Médecine – Tours

Membres du Jury :

Professeur Pierre-Jean PISELLA, Ophtalmologie, Faculté de Médecine – Tours

Professeur Emmanuel LESCANNE, Oto-rhino-laryngologie, Faculté de Médecine – Tours

**Directeur de thèse : Docteur Arnaud PARE, Chirurgie Maxillo-Faciale et Stomatologie
PHU, Faculté de Médecine – Tours**

UNIVERSITE DE TOURS
FACULTE DE MEDECINE DE TOURS

DOYEN

Pr Patrice DIOT

VICE-DOYEN

Pr Henri MARRET

ASSESSEURS

Pr Denis ANGOULVANT, *Pédagogie*

Pr Mathias BUCHLER, *Relations internationales*

Pr Theodora BEJAN-ANGOULVANT, *Moyens – relations avec l'Université*

Pr Clarisse DIBAO-DINA, *Médecine générale*

Pr François MAILLOT, *Formation Médicale Continue*

Pr Patrick VOURC'H, *Recherche*

RESPONSABLE ADMINISTRATIVE

Mme Fanny BOBLETER

DOYENS HONORAIRES

Pr Emile ARON (†) – 1962-1966

Directeur de l'Ecole de Médecine - 1947-1962

Pr Georges DESBUQUOIS (†) - 1966-1972

Pr André GOUAZE (†) - 1972-1994

Pr Jean-Claude ROLLAND – 1994-2004

Pr Dominique PERROTIN – 2004-2014

PROFESSEURS EMERITES

Pr Daniel ALISON

Pr Gilles BODY

Pr Jacques CHANDENIER

Pr Alain CHANTEPIE

Pr Philippe COLOMBAT

Pr Etienne DANQUECHIN-DORVAL

Pr Pascal DUMONT

Pr Dominique GOGA

Pr Gérard LORETTE

Pr Dominique PERROTIN

Pr Roland QUENTIN

PROFESSEURS HONORAIRES

P. ANTHONIOZ – P. ARBEILLE – A. AUDURIER – A. AUTRET – P. BAGROS – P. BARDOS – C. BARTHELEMY – J.L. BAULIEU – C. BERGER – JC. BESNARD – P. BEUTTER – C. BONNARD – P. BONNET – P. BOUGNOUX – P. BURDIN – L. CASTELLANI – B. CHARBONNIER – P. CHOUTET – T. CONSTANS – P. COSNAY – C. COUET – L. DE LA LANDE DE CALAN – J.P. FAUCHIER – F. FETISSOF – J. FUSCIARDI – P. GAILLARD – G. GINIES – A. GOUDEAU – J.L. GUILMOT – N. HUTEN – M. JAN – J.P. LAMAGNERE – F. LAMISSE – Y. LANSON – O. LE FLOCH – Y. LEBRANCHU – E. LECA – P. LECOMTE – AM. LEHR-DRYLEWICZ – E. LEMARIE – G. LEROY – M. MARCHAND – C. MAURAGE – C. MERCIER – J. MOLINE – C. MORAINÉ – J.P. MUH – J. MURAT – H. NIVET – L. POURCELOT – P. RAYNAUD – D. RICHARD-LENOBLE – A. ROBIER – J.C. ROLLAND – D. ROYERE – A. SAINDELLE – E. SALIBA – J.J. SANTINI – D. SAUVAGE – D. SIRINELLI – J. WEILL

PROFESSEURS DES UNIVERSITES - PRATICIENS HOSPITALIERS

ANDRES Christian.....	Biochimie et biologie moléculaire
ANGOULVANT Denis	Cardiologie
AUPART Michel.....	Chirurgie thoracique et cardiovasculaire
BABUTY Dominique	Cardiologie
BAKHOS David.....	Oto-rhino-laryngologie
BALLON Nicolas.....	Psychiatrie ; addictologie
BARILLOT Isabelle.....	Cancérologie ; radiothérapie
BARON Christophe	Immunologie
BEJAN-ANGOULVANT Théodora	Pharmacologie clinique
BERHOUET Julien	Chirurgie orthopédique et traumatologique
BERNARD Anne	Cardiologie
BERNARD Louis	Maladies infectieuses et maladies tropicales
BLANCHARD-LAUMONNIER Emmanuelle	Biologie cellulaire
BLASCO Hélène.....	Biochimie et biologie moléculaire
BONNET-BRILHAULT Frédérique	Physiologie
BOURGUIGNON Thierry	Chirurgie thoracique et cardiovasculaire
BRILHAULT Jean.....	Chirurgie orthopédique et traumatologique
BRUNEREAU Laurent.....	Radiologie et imagerie médicale
BRUYERE Franck.....	Urologie
BUCHLER Matthias.....	Néphrologie
CALAIS Gilles.....	Cancérologie, radiothérapie
CAMUS Vincent.....	Psychiatrie d'adultes
CORCIA Philippe.....	Neurologie
COTTIER Jean-Philippe	Radiologie et imagerie médicale
DE TOFFOL Bertrand	Neurologie
DEQUIN Pierre-François.....	Thérapeutique
DESOUBEAUX Guillaume.....	Parasitologie et mycologie
DESTRIEUX Christophe	Anatomie
DIOT Patrice.....	Pneumologie
DU BOUEXIC de PINIEUX Gonzague	Anatomie & cytologie pathologiques
DUCLUZEAU Pierre-Henri	Endocrinologie, diabétologie, et nutrition
EL HAGE Wissam.....	Psychiatrie adultes
EHRMANN Stephan	Médecine intensive – réanimation
FAUCHIER Laurent	Cardiologie
FAVARD Luc.....	Chirurgie orthopédique et traumatologique
FOUGERE Bertrand	Gériatrie
FOUQUET Bernard.....	Médecine physique et de réadaptation
FRANCOIS Patrick.....	Neurochirurgie
FROMONT-HANKARD Gaëlle	Anatomie & cytologie pathologiques
GAUDY-GRAFFIN Catherine.....	Bactériologie-virologie, hygiène hospitalière
GOUPILLE Philippe	Rhumatologie
GRUEL Yves.....	Hématologie, transfusion
GUERIF Fabrice	Biologie et médecine du développement et de la reproduction
GUILLON Antoine.....	Médecine intensive – réanimation
GUYETANT Serge	Anatomie et cytologie pathologiques
GYAN Emmanuel.....	Hématologie, transfusion
HAILLLOT Olivier.....	Urologie
HALIMI Jean-Michel.....	Thérapeutique
HANKARD Régis.....	Pédiatrie
HERAULT Olivier	Hématologie, transfusion
HERBRETEAU Denis	Radiologie et imagerie médicale
HOURIoux Christophe.....	Biologie cellulaire
LABARTHE François	Pédiatrie
LAFFON Marc	Anesthésiologie et réanimation chirurgicale, médecine d'urgence
LARDY Hubert.....	Chirurgie infantile
LARIBI Saïd.....	Médecine d'urgence
LARTIGUE Marie-Frédérique	Bactériologie-virologie
LAURE Boris	Chirurgie maxillo-faciale et stomatologie
LECOMTE Thierry.....	Gastroentérologie, hépatologie
LESCANNE Emmanuel.....	Oto-rhino-laryngologie
LINASSIER Claude	Cancérologie, radiothérapie
MACHET Laurent	Dermato-vénéréologie
MAILLOT François	Médecine interne
MARCHAND-ADAM Sylvain	Pneumologie

MARRET Henri	Gynécologie-obstétrique
MARUANI Annabel	Dermatologie-vénéréologie
MEREGHETTI Laurent	Bactériologie-virologie ; hygiène hospitalière
MITANCHEZ Delphine	Pédiatrie
MORINIERE Sylvain	Oto-rhino-laryngologie
MOUSSATA Driffa	Gastro-entérologie
MULLEMAN Denis	Rhumatologie
ODENT Thierry	Chirurgie infantile
OUAÏSSI Mehdi	Chirurgie digestive
OULDAMER Lobna	Gynécologie-obstétrique
PAINTAUD Gilles	Pharmacologie fondamentale, pharmacologie clinique
PATAT Frédéric	Biophysique et médecine nucléaire
PERROTIN Franck	Gynécologie-obstétrique
PISELLA Pierre-Jean	Ophtalmologie
PLANTIER Laurent	Physiologie
REMERAND Francis	Anesthésiologie et réanimation, médecine d'urgence
ROINGEARD Philippe	Biologie cellulaire
ROSSET Philippe	Chirurgie orthopédique et traumatologique
RUSCH Emmanuel	Epidémiologie, économie de la santé et prévention
SAINT-MARTIN Pauline	Médecine légale et droit de la santé
SALAME Ephrem	Chirurgie digestive
SAMIMI Mahtab	Dermatologie-vénéréologie
SANTIAGO-RIBEIRO Maria	Biophysique et médecine nucléaire
THOMAS-CASTELNAU Pierre	Pédiatrie
TOUTAIN Annick	Génétique
VAILLANT Loïc	Dermato-vénéréologie
VELUT Stéphane	Anatomie
VOURC'H Patrick	Biochimie et biologie moléculaire
WATIER Hervé	Immunologie
ZEMMOURA Ilyess	Neurochirurgie

PROFESSEUR DES UNIVERSITES DE MEDECINE GENERALE

DIBAO-DINA Clarisse
LEBEAU Jean-Pierre

PROFESSEURS ASSOCIES

MALLET Donatien Soins palliatifs
POTIER Alain Médecine Générale
ROBERT Jean Médecine Générale

PROFESSEUR CERTIFIE DU 2ND DEGRE

MC CARTHY Catherine Anglais

MAITRES DE CONFERENCES DES UNIVERSITES - PRATICIENS HOSPITALIERS

AUDEMARD-VERGER Alexandra Médecine interne
BARBIER Louise Chirurgie digestive
BINET Aurélien Chirurgie infantile
BRUNAUT Paul Psychiatrie d'adultes, addictologie
CAILLE Agnès Biostat., informatique médical et technologies de communication
CLEMENTY Nicolas Cardiologie
DENIS Frédéric Odontologie
DOMELIER Anne-Sophie Bactériologie-virologie, hygiène hospitalière
DUFOUR Diane Biophysique et médecine nucléaire
ELKRIEF Laure Hépatologie – gastroentérologie
FAVRAIS Géraldine Pédiatrie
FOUQUET-BERGEMER Anne-Marie Anatomie et cytologie pathologiques
GATAULT Philippe Néphrologie
GOUILLEUX Valérie Immunologie
GUILLON-GRAMMATICO Leslie Epidémiologie, économie de la santé et prévention

HOARAU CyrilleImmunologie
 IVANES FabricePhysiologie
 LE GUELLEC Chantal.....Pharmacologie fondamentale, pharmacologie clinique
 LEFORT BrunoPédiatrie
 LEGRAS Antoine.....Chirurgie thoracique
 LEMAIGNEN AdrienMaladies infectieuses
 MACHET Marie-ChristineAnatomie et cytologie pathologiques
 MOREL BaptisteRadiologie pédiatrique
 PIVER Éric.....Biochimie et biologie moléculaire
 REROLLE Camille.....Médecine légale
 ROUMY JérômeBiophysique et médecine nucléaire
 SAUTENET BénédicteThérapeutique
 TERNANT David.....Pharmacologie fondamentale, pharmacologie clinique
 VUILLAUME-WINTER Marie-Laure.....Génétique

MAITRES DE CONFERENCES DES UNIVERSITES

AGUILLON-HERNANDEZ Nadia.....Neurosciences
 NICOGLOU AntoninePhilosophie – histoire des sciences et des techniques
 PATIENT Romuald.....Biologie cellulaire
 RENOUX-JACQUET CécileMédecine Générale

MAITRES DE CONFERENCES ASSOCIES

BARBEAU Ludivine.....Médecine Générale
 RUIZ Christophe.....Médecine Générale
 SAMKO Boris.....Médecine Générale

CHERCHEURS INSERM - CNRS - INRA

BOUAKAZ AyacheDirecteur de Recherche INSERM – UMR INSERM 1253
 CHALON SylvieDirecteur de Recherche INSERM – UMR INSERM 1253
 COURT Y YvesChargé de Recherche CNRS – UMR INSERM 1100
 DE ROCQUIGNY HuguesChargé de Recherche INSERM – UMR INSERM 1259
 ESCOFFRE Jean-MichelChargée de Recherche INSERM – UMR INSERM 1253
 GILOT Philippe.....Chargé de Recherche INRA – UMR INRA 1282
 GOUILLEUX FabriceDirecteur de Recherche CNRS – UMR CNRS 7001
 GOMOT Marie.....Chargée de Recherche INSERM – UMR INSERM 1253
 HEUZE-VOURCH Nathalie.....Chargée de Recherche INSERM – UMR INSERM 1100
 KORKMAZ Brice.....Chargé de Recherche INSERM – UMR INSERM 1100
 LAUMONNIER FrédéricChargé de Recherche INSERM - UMR INSERM 1253
 MAZURIER Frédéric.....Directeur de Recherche INSERM – UMR CNRS 7001
 MEUNIER Jean-ChristopheChargé de Recherche INSERM – UMR INSERM 1259
 PAGET Christophe.....Chargé de Recherche INSERM – UMR INSERM 1100
 RAOUL WilliamChargé de Recherche INSERM – UMR CNRS 7001
 SI TAHAR Mustapha.....Directeur de Recherche INSERM – UMR INSERM 1100
 WARDAK Claire.....Chargée de Recherche INSERM – UMR INSERM 1253

CHARGES D'ENSEIGNEMENT

Pour l'Ecole d'Orthophonie

DELORE ClaireOrthophoniste
 GOUIN Jean-Marie.....Praticien Hospitalier

Pour l'Ecole d'Orthoptie

MAJZOUB Samuel.....Praticien Hospitalier

Pour l'Ethique Médicale

BIRMELE Béatrice.....Praticien Hospitalier

Remerciements

Aux membres du jury

Monsieur le Professeur Boris LAURE, président du jury

Je vous remercie de me faire l'honneur d'être le président du jury de cette thèse. Grâce à vous, j'ai pu découvrir la complexité de la pathologie orbito-palpébrale. C'est un honneur d'avoir pu travailler au sein de votre équipe. Merci pour votre disponibilité, l'encadrement et la rigueur dont vous faites preuve. Veuillez trouver dans ce travail l'expression de mon profond respect.

Monsieur le Docteur Arnaud PARE, directeur de thèse

Je te remercie de m'avoir encadré dans ce travail. Merci pour ton aide si précieuse et ton accompagnement tout au long de la rédaction de cette thèse, malgré la distance. Ce fut très agréable d'avancer sur ce travail ensemble. Bon retour parmi nous !

Monsieur le Professeur Emmanuel LESCANNE, juge

Je vous remercie d'avoir accepté de faire parti du jury de thèse. Je vous suis reconnaissant du temps consacré pour cela. Ce fut un plaisir de travailler au sein de votre équipe pendant un semestre, permettant d'élargir mes connaissances.

Monsieur le Professeur Pierre-Jean PISELLA, juge

Je vous remercie de me faire l'honneur de juger ce travail et d'y apporter vos connaissances et votre expertise.

Au Docteur Aymeric AMELOT, pour ta grande disponibilité et ton aide dans ce travail. Ta contribution dans les analyses statistiques difficiles m'a été d'un immense soutien. Travailler ensemble lors de mon semestre en Neurochirurgie m'aura beaucoup appris.

A Clara GIORGETTI, ophtalmologiste agréée, d'avoir pris le temps de répondre à mes questions et de m'apporter vos connaissances dans ce domaine.

Au Professeur Dominique GOGA pour votre rigueur chirurgicale. Merci pour votre patience et votre pédagogie auprès des internes. J'ai beaucoup appris, tant sur le plan humain que professionnel.

Au Docteur Béatrice BONIN-GOGA pour votre approche pédiatrique.

Au Docteur Aline JOLY, pour la formation et l'énergie dont tu fais preuve dans la chirurgie pédiatrique, si particulière mais enrichissante à tes côtés.

Au Docteur Chrystelle QUEIROS, pour ta confiance, l'exigence et l'encadrement dont tu fais preuve pour nous faire constamment progresser, et ce toujours dans la bonne humeur.

Aux Chefs et Assistants de Maxillo (Julie, Benjamin, Claire, Marion, Sarah), qui se sont succédés au cours de mon internat, et qui chacun a contribué à ma formation et m'a donné confiance. Merci pour vos facultés à encadrer, encourager et pousser les internes à être meilleur chaque jour.

A mes co-internes, Benji, Abir, Sarah, Ségo, Dimitri, Cerise, « Didier », Agathe. Les expériences partagées, l'entraide et la bonne humeur sont toujours aussi agréables au quotidien. Merci pour ces semestres passés ensemble.

Aux Inter CHU, notamment Quentin pour ton humour et ton « sourire » au quotidien ! Toujours partant pour se détendre autour d'une mousse post stage. Merci à Alice qui a su importer son accent du sud, et que je retrouverai à Toulouse pour mon dernier semestre.

Aux infirmières de consultation, qui m'ont connu au tout début de ma formation, jeune interne. Vous m'avez souvent conseillé tout au long de mes semestres, et aussi permis de décompresser autour d'un café.

Aux infirmières, personnel du service et du secrétariat, qui m'ont aussi vu grandir. Merci pour ce que vous m'avez apporté et pour votre accompagnement au quotidien.

Aux infirmier (es) / ibod, qui travaillent toujours dans la bonne humeur et la sympathie. Vous m'avez poussé et encouragé à donner à chaque fois le meilleur de moi même. Merci pour tout.

Aux différents services dans lesquels j'ai pu évoluer, merci pour l'enseignement et l'encadrement que j'ai pu avoir dans ces autres disciplines.

SERMENT D'HIPPOCRATE

En présence des Maîtres de cette Faculté,
de mes chers condisciples
et selon la tradition d'Hippocrate,
je promets et je jure d'être fidèle aux lois de l'honneur
et de la probité dans l'exercice de la Médecine.

Je donnerai mes soins gratuits à l'indigent,
et n'exigerai jamais un salaire au-dessus de mon travail.

Admis dans l'intérieur des maisons, mes yeux
ne verront pas ce qui s'y passe, ma langue taira
les secrets qui me seront confiés et mon état ne servira pas
à corrompre les mœurs ni à favoriser le crime.

Respectueux et reconnaissant envers mes Maîtres,
je rendrai à leurs enfants
l'instruction que j'ai reçue de leurs pères.

Que les hommes m'accordent leur estime
si je suis fidèle à mes promesses.
Que je sois couvert d'opprobre
et méprisé de mes confrères
si j'y manque.

Résumé

Prise en charge chirurgicale du syndrome de l'orbite énuclée ?

Une étude pronostique rétrospective

Contexte : Le syndrome de l'orbite énuclée (SOE) est une séquelle difficile à corriger chez les patients anophtalmes qui nécessite souvent plusieurs interventions chirurgicales.

Objectif : Le but de cette étude rétrospective monocentrique était de rapporter notre expérience sur la prise en charge du SOE ainsi que les facteurs prédictifs d'une prise en charge en plusieurs étapes.

Matériel et méthodes : Tous les patients traités chirurgicalement pour un SOE entre 2006 et 2020 au centre hospitalier universitaire de Tours (France) ont été inclus. Les données démographiques et médicales pré et postopératoires ont été recueillies. La chirurgie a été considérée comme réussie lorsqu'aucun symptôme clinique de SOE n'a été observé.

Résultats : Trente-six patients ont été inclus, 22,2% d'entre eux ont vu leur SOE corrigé après la première chirurgie. Dans l'analyse multivariée (MVA), le symptôme du creux sus palpébral est resté le principal facteur significatif associé à une correction incomplète après la première chirurgie (OR 45,5, IC 95% (3,481-594,6), $p=0,004$). Pour les corrections ultérieures, le ptosis était le seul facteur pronostique significatif nécessitant plusieurs interventions chirurgicales ($p=0,005$). A la fin de la prise en charge, 94,4% des patients ont eu des résultats satisfaisants.

Conclusions : La prise en charge d'un SOE implique la correction à la fois de la cavité orbitaire et des tissus mous. Bien que sa correction soit complexe et prenne du temps dans la majorité des cas, les patients doivent être informés que le résultat cosmétique final reste bon au prix de plusieurs interventions chirurgicales.

Mots clés : Syndrome de l'orbite, reconstruction de l'orbite anophtalme, syndrome de l'orbite post-énucléation, syndrome de l'orbite restreinte, chirurgie d'énucléation, étude pronostique.

Summary

Surgical management of post enucleated socket syndrome?

A retrospective prognostic study

Background: Post enucleated socket syndrome (PESS) is a challenging sequela in anophthalmic patients that often requires several surgeries.

Objective: The aim of this retrospective monocentric study was to report our experience on the management of PESS as well as the factors predicting for a multistep management.

Material and methods: All the surgically treated patients for a PESS from 2006 to 2020 at the University Hospital Center of Tours (France) were included. Pre and postoperative demographics and medical data were collected. The surgery was considered as successful when no clinical PESS symptoms were observed.

Results: Thirty-six patients were included, 22.2% of them had their PESS corrected after the first surgery. In the multivariate analysis (MVA), the deep upper lid sulcus symptom remained the main significant factor associated with an incomplete correction after the first surgery (OR 45.5, IC 95% (3.481-594.6), $p=0.004$). For further corrections, the ptosis was the only significant prognostic factor requiring several surgeries ($p=0.005$). At the end of the management, 94.4% of the patients had satisfying outcomes.

Conclusions: The management of a PESS involves the correction of both the orbital cavity and the soft tissues. Although its correction is complex and time consuming in the majority of cases, the patients should be informed that the final cosmetical outcomes remain good at the expense of several surgeries.

Keywords: Socket syndrome, Anophthalmic socket reconstruction, post-enucleation socket syndrome, restricted socket syndrome, enucleation surgery, prognostic study

Table des matières

Remerciements.....	6
Serment d'Hippocrate	7
Résumé.....	10
Summary	11
Table des matières	12
Introduction	13
Materials and methods.....	15
<i>Patient selection.....</i>	<i>15</i>
<i>Surgical procedure</i>	<i>16</i>
<i>Statistical analysis</i>	<i>17</i>
Results.....	18
<i>Population description.....</i>	<i>18</i>
<i>Factors predicting for poor outcomes</i>	<i>24</i>
Discussion	27
Conclusion	30
References	31

Introduction

The orbital reconstruction after an enucleation or an evisceration surgery potentially gives disappointing cosmetical outcomes despite an optimal management. Indeed, the enucleation (i.e., entire removal of the eye), already suffering from a relative high risk of acute complications (e.g., implant exposure or infection) (Yousuf et al., 2012), or even the evisceration better covering the intra-orbital implant (i.e., four scleral petals technique (Sales-Sanz and Sanz-Lopez, 2007), (Keilani et al., 2019), (Ranno et al., 2020) can be both responsible for longer-term sequela such as the post enucleation socket syndrome (PESS). The PESS is defined by set of signs of the anophthalmic cavity, potentially causing unaesthetically complications including enophthalmos, excessive upper eyelid sulcus, lower eyelid laxity, ptosis and postero-superior drop of the prosthesis (Vistnes, 1976). In addition, a retraction often involves the fornix area as well which fosters the bad positioning of the prosthesis (Collin JRO., 2006).

The cause of the PESS remains complex, likely multifactorial (e.g., orbital fat atrophy, extraocular muscle cone migration, bony loss, levator palpebrae superioris (LPS) anomaly (Choi et al., 2005), (Devoe, 1945), (Bello and Levine, 1980), (Pfeiffer, 1987), (Pearl, 1985) and its management strategy remains very challenging for both the oculoplastic surgeons and the ocularists. Indeed, a perfect fitting between the orbital volume (i.e., bone cavity and soft tissues) and the orbital implant (e.g., size) is required to get a well positioning of the prosthesis and an optimal function.

However, when a PESS occurs, its correction can be partial, long or even disappointing. Certain patients can be efficiently treated in a single procedure while others require a longer management with several procedures to get acceptable outcomes. Consequently, it seems relevant and helpful to investigate which main factors and symptoms

are responsible for an incomplete initial correction to better predict the duration of the surgical management and to better inform the patients about the expected results.

For this purpose, this retrospective monocentric study aimed to report our experience on the surgical management of PESS as well as the prognostic factors or symptoms directly impacting the number procedures.

Materials and methods

Patient selection

We retrospectively included the cases displaying a PESS and who were operated in the Department of Maxillofacial and Facial Plastic Surgery at the University Hospital Center of Tours (Trousseau Hospital, France) from January 2006 to August 2020. All the surgeries were performed by the same surgeon. The local ethics committee approved this study, and a written consent was obtained from each patient. All the patients who had a prior enucleation or evisceration surgery and who were then reconstructed with an intra-orbital implant and an ocular prosthesis were included in the study. The following demographic and medical data were collected using the patient's medical records: age, gender, etiology of eye loss, primary eye management (i.e., evisceration or enucleation, radiation or proton therapy, chemotherapy), the timing of the primary intra-orbital implantation, the prosthesis dysfunction, the characteristics of the intra-orbital implant (i.e., type, size), the type and the number of procedures required to correct the PESS (lipostructure, fornix deepening, bone grafting, ptosis surgery, external canthopexy, tarsorrhaphy, change of the intra-orbital implant). The pre and postoperative severity of the PESS was rated from 0 to 5 according to the number of symptoms (i.e., enophthalmos, excessive deep upper lid sulcus, short fornix, ptosis, associated signs such as canthal dystopia and lower eyelid malposition; 1 point per symptom, no symptoms= 0 point) and was graded as cured (0 point), mild (1 point), moderate (2 points) or severe (≥ 3 points). Enophthalmos was measured (i.e., Hertel exophthalmometer) and defined by a 2mm difference compared to the unaffected side (Vagefi et al., 2007) (Paik et al., 2012). Deep upper lid sulcus (DUS) was clinically evaluated and was defined when an excessive medial sulcus was observed compared to the contralateral side, (Kaltreider and Lucarelli, 2002) (Paik et al., 2012). The fornix was considered as short when it prevented for a good retention of the prosthesis (Bajaj et al., 2006) (Choi et al.,

2005). Ptosis was defined by an upper eyelid covering more than 2mm the sclero-corneal limbus

Surgical procedure

We performed a standardized management as follow: Firstly, we assessed the integrity of the orbital bone (i.e., framework and cavity) using a preoperative CT-scan to detect the cases requiring a prior bone surgery (e.g., bone graft or orbital osteotomy) and/or a bigger intra-orbital implant. Regarding the soft tissue abnormalities, an intra-orbital fat transfer (i.e., lipostructure) were then carried out in case of enophthalmos and/or and DUS. To correct a severe fornix retraction, we performed a fornix deepening using a mucosal graft (i.e., harvested from the inner cheek) associated with a conformer and a 4-month tarsorrhaphy. In the less severe cases displaying a lower eyelid anomaly (e.g., entropion), we preferred a fibro-mucosal graft (i.e., from the palatal mucosa) without postoperative conformer and eyelid closure. An external canthopexy was also performed in case of eyelid malposition (e.g., entropion, ectropion) or canthal dystopia. The ptosis surgery was the last step by performing a LPS muscle reattachment (i.e., resection or aponeurosis plication) or a frontal suspension as last resort. The clinical outcomes were assessed by both the surgeon and ocularist after each PESS surgery.

Statistical analysis

Data were analyzed using the SPSS program V17.0 (SPSS, Chicago, IL, USA). Mann-Whitney U and χ^2 Pearson tests were used for the analysis. Data were presented as the mean $\pm$ standard deviation. A p-value < 0.05 was considered as statistically significant. The prognostic factors for unsatisfying correction were analyzed in univariate analysis using log-rank tests for qualitative variables and univariate Cox models for quantitative variables. Thereafter, multiple logistic regressions used backward-stepwise variable elimination (with the variable exit threshold set at $p > 0.05$). Factors achieving $p < 0.05$ for association PESS efficacy in our univariable analyses were entered into the multivariable model. All potential explanatory variables included in the multivariable analyses were subjected to collinearity analysis with a correlation matrix. Variables associated with one another were not included in the model.

Results

Population description

Thirty-six patients displaying a PESS were included in the study (see Table I). The sex ratio was 0.89 (17 males /19 females) and the mean age at the first surgery was 52.4 Y.O (range 18-81 Y.O). The average follow-up was 30.3 months (range 1 – 130). The PESS occurred after an evisceration in 22 patients (61.1%), after an enucleation in 13 patients (36.1%) and one was from unknown etiology. The main causes of eye loss were from trauma (55.6%) or oncological (25%) origins. All the patients had their eye globe reconstructed with an intra-orbital implant (e.g., bioceramic or silicone) from 16 to 22 mm that was placed at the same time as the eye removal in 23 patients (63.4%). The primary eye management included a radiotherapy, a chemotherapy or a proton therapy in 5.5%, 2.8% and 8.3% of cases respectively. As initial symptoms, the enophthalmos was observed in 16.7% of patients, the DUS in 55.6%, the ptosis in 58.3% and a short fornix in 38.89%. A prosthesis dysfunction was observed in 9 cases (25%) and a lower eyelid anomaly in 19 cases (52.8%).

TABLE I. Population description (N= 36)

Age		Years	
Mean		52.39	
Median		50.0	
Range		18 – 81	
Variables		Number	Percentage
Sex ratio			
Male		17	47.22%
Female		19	52.78%
Cause of eye loss			
Trauma		20	55.60%
Malignancies		9	25.00%
<i>Choroidal melanoma</i>		5	
<i>Optic nerve tumor</i>		1	
<i>Retinoblastoma</i>		3	
Others		7	19.44%
<i>Cataract / Glaucoma</i>		2	
<i>Steven Johnson Syndrome</i>		1	
<i>Retinal detachment</i>		2	
<i>Unknown</i>		2	
Side			
Right		18	50.00%
Left		18	50.00%
Previous eye management			
Evisceration		22	61.11%
Enucleation		13	36.11%
Unknown		1	2.78%
Late implant placement		13	36.11%
Initial adjuvant treatment			
Radiation therapy		2	5.55%
Chemotherapy		1	2.78%
Protontherapy		3	8.33%
Initial symptoms			
Enophtalmos		6	16.67%
Deep upper lid sulcus		20	55.56%
Ptosis		21	58.33%
Fornix anomaly		14	38.89%
Eyelid anomaly		19	52.78%
Prosthesis dysfunction		9	25.00%

Eyelid anomaly: canthal dystopia, ectropion, entropion

The main first procedures were external canthopexy, fat transfer, ptosis surgery and fornix deepening in 61.1%, 44.4%, 36.1%, 36.1% and 22.2% of cases respectively. Five patients (13.9%) got their implant changed for a bigger one and 3 patients had an orbital bone graft. On the 36 patients, a unique surgery was required in 22.2% (8 patients) while 2, 3 or more surgeries were performed in 33.3 % and 38.9% of cases respectively to correct the PESS symptoms. Two patients were lost to follow-up after the first surgery. When 2 or more surgeries were required, the main procedures were ptosis surgery, external canthopexy, fat transfer and fornix deepening in 58.3%, 36.1%, 36.1% and 22.2% respectively (Table II).

After the first surgery, we observed an incomplete correction in the majority of cases or even the occurrence of new PESS symptoms in 11 patients as detailed in the table III. Thus, six more patients with a ptosis and four more with a lower eyelid anomaly were diagnosed after the first surgery.

TABLE II. Surgical procedures

	Nb	%
First Surgery (Nb=36)		
Intra-orbital implant change	5	13.89%
Orbital osteotomy	1	2.78%
Fat transfer	16	44.44%
Fornix surgery	8	22.22%
Bone grafting	3	8.33%
Ptosis surgery	13	36.11%
<i>LPS muscle reattachment</i>	13	36.11%
<i>Frontal suspension</i>	0	0.00%
External canthopexy	22	61.11%
Tarsorrhaphy	6	16.67%
Additional surgeries (N=26)		
Fat transfer	13	36.11%
Fornix surgery	8	22.22%
Bone grafting	0	0.00%
Ptosis surgery	21	58.33%
<i>LPS muscle reattachment procedures</i>	18	50%
<i>Frontalis suspension</i>	3	8.33%
External canthopexy	13	36.11%
Tarsorrhaphy	1	2.78%
Number of corrections		
1	8/36	22.22%
≥2	26/36	72.22%
2	12	33.33%
3	10	27.78%
4	1	2.78%
5	2	5.56%
6	1	2.78%

TABLE III. Efficiency of the first surgery

Preoperative symptoms (Nb=36)	Complete correction (Nb)	postoperative occurrence (Nb)
Enophthalmos	5/6	+1
Deep upper lid sulcus	12/20	+1
Ptosis	6/21	+6
Fornix anomaly	9/14	+1
Eyelid anomaly	17/19	+4

Eyelid anomaly: canthal dystopia, ectropion, entropion

The initial preoperative average severity of the PESS was 2.2 +/- 0.89 for the whole cohort and its evolution according to the number of surgeries is detailed in Figure 1. Finally, the average severity score was 0.05 +/- 0.229 and 94.4% of the patients had their PESS corrected (Figure 2). No complications such as infection, wound healing disorder or implant exposure were observed in our cohort.

FIGURE 1. Evolution of the PESS severity
Abbreviation : SD = Standard deviation

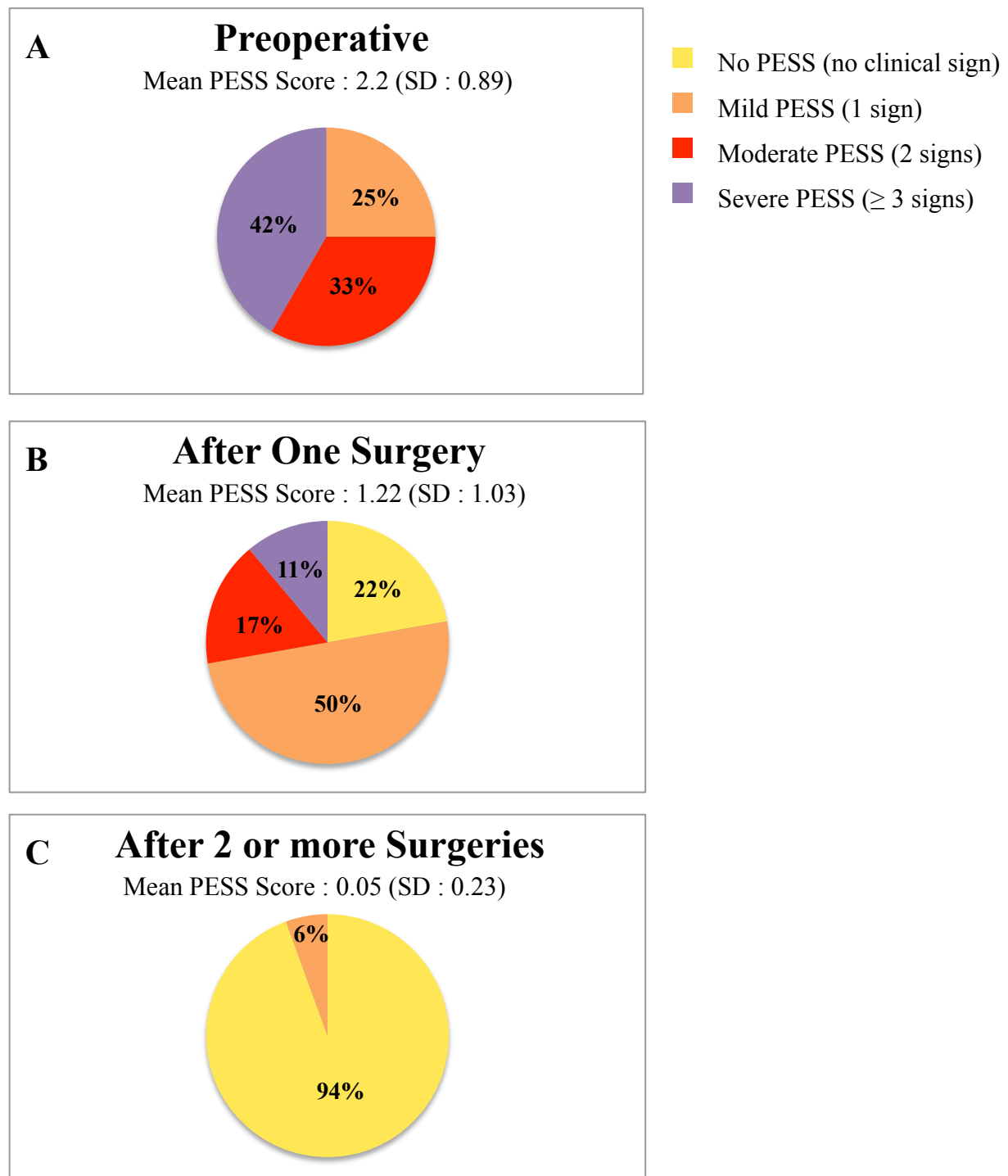


FIGURE II. Clinical outcomes of the PESS surgery.



(A) Preoperative photography showing a PESS after an evisceration (post-trauma) and displaying an excessive DUS and a lower eyelid laxity.

(B) Outcome after the first surgery (intra-orbital lipostructure and an external canthopexy) showing an incomplete correction of the DUS and a postoperative ptosis.

(C) Three-month final results after two more surgeries including a second lipostructure, an additional external canthopexy and a LPS plication as last procedure.

Factors predicting for poor outcomes

The prognostic factors that were associated with an incomplete correction of the PESS are summarized in the table IV. At the first surgery, the univariate analysis (UVA) showed a significant lower success in patients who had a prior delayed intra orbital implant placement ($p=0.032$) or evisceration ($p=0.022$). The harder symptoms to correct were the DUS ($p=0.012$) and the dysfunction of the prosthesis ($p=0.012$). Patients who underwent an intra-orbital fat transfer also had a significant higher rate of incomplete correction ($p=0.05$). All the prognostic factors which were a significant in UVA were also assessed using a multiple logistic regression (i.e., multivariate analysis, MVA). The DUS symptom remained the only significant factor associated with an incomplete correction (OR 45.5, IC 95% (3.481-594.6), $p=0.004$) while the others were not significant.

Two patients were then lost to follow-up and 26 patients undergoing more than one surgery were analysed. Among them, a ptosis after the first correction was the only significant symptom that was statistically associated with a lower efficiency (OR 9.8, IC 95% (1.3-71.5), $p=0.005$) that then required a higher number of procedures to get a satisfying outcome (Table V).

TABLE IV. Prognostic factors of the PESS surgery

	UVA p-value	MVA p-value
Age		
<40 y.o.	p=0.691	
<50 y.o.	p=0.222	
<60 y.o.	p=0.651	
Sexe	p=1.00	
Side	p=1.00	
Cause of eye loss	p=0.450	
Previous eye management		
Evisceration/enucleation	p=0.022	p=0.998 OR 0.2 IC 95% (0.000-NC)
Radiation	p=1.00	
Chemotherapy	p=1.00	
Protontherapy	p=0.541	
Symptoms		
Number >1	p=0.213	
Enophthalmos	p=1.00	
Deep upper lid sulcus	p=0.012	p=0.004 OR 45.5 IC 95% (3.481-594.6)
Ptosis	p=0.694	
Fornix anomaly	p=0.444	
Eyelid anomaly	p= 0.695	
Prosthesis dysfunction	p=0.012	p=0.512 OR 0.325 IC 95% (0.011-9.388)
Late intra orbital implant	p=0.032	p=0.998 OR 0.2 IC 95% (0-0.8)
Surgery		
Lipostructure	p=0.05	p=0.999 OR 0.41 IC 95% (0.05-12.2)
Fornix sugery	p=1.00	
Bone grafting	p=1.00	
Ptosis surgery	p=0.397	
External canthopexy	p=0.302	
Tarsorrhaphy	p=0.683	

Eyelid anomaly: canthal dystopia, ectropion, entropion

Abbreviation : UVA, Univariate Analysis ; MVA, Multivariate Analysis

TABLE V. Statistical analysis of incomplete corrections after the first surgery on subsequent procedures

	2 or more surgeries χ^2 test p value
Persistent symptoms after the first surgery	
Enophthalmos	1.00
Deep upper lid sulcus	0.160
Ptosis	0.005
Fornix anomaly	0.302
Eyelid anomaly	0.322

Eyelid anomaly: canthal dystopia, ectropion, entropion

Discussion

In our study, we highlighted how the correction of PESS could be complex and time consuming. An optimal result in a single step surgery remains uncertain (22% of our cohort) and likely depends on several factors. Interestingly, we investigated which factors could be responsible for an average or even disappointing results after the first surgeries and how many procedures were often required to get satisfying functional and cosmetical outcomes. For this purpose, we rated the patients at the different steps of the surgical management to objectively assess the efficiency of the corrections.

Thus, the preoperative DUS was the main symptom predicting for a poor outcome at the first correction (both UVA and MVA). Indeed, its correction is complex and mostly involves repositioning the intra-orbital implant by fixing both the intra orbital volume and bone abnormalities. Thereby, the first procedure should be the restoration of the bony anatomy and also the increase of the implant size if needed (Kaltreider, 2000). In addition, our prognostic analysis suggests that other procedures should be considered at the same time to optimize its correction (Liu and Kai Liu, 2012). Therefore, the intraorbital and the upper eyelid fat transfer (Malet, 2000) seems to be one of the most suitable option due to (i) its low resorption rate (10-15%) (ii) its potential role for improving the soft tissue trophicity (iii) its low donor site morbidity and (iv) and its technical simplicity as well. Other procedures have to be considered such as the dermis fat graft at the preaponevrotic space that displays good results in filling the upper sulcus. However, its long-term resorption rate looks higher in literature (25 to 40%) and its abdominal harvesting remains more invasive (Gotzamanis et al., 2001), (Kuzmanović Elabjer et al., 2010). Moreover, the dermo-fat based technique does not easily allow a deeper correction by increasing the intra-orbital volume in patients that already have an intra-orbital implant. Another attractive option is the use of fillers (e.g., hyaluronic acid) allowing a fast correction of both the orbital volume and the upper sulcus (Crochelet et

al., 2012), (Leyngold et al., 2014). This procedure is less invasive and can be carried out at the office without general anesthesia. However, its systematical full resorption in 6 to 12 months requires repeated injections and the deep injection can be stressful for the patient and responsible for oculo-cardiac reflex symptoms. That is why the fat transfer is preferred in our team, especially for the most severe cases, even it often required two or more surgeries. Consequently, the correction of the DUS being poor in a one step, it probably explains why the lipostructure, that was widely used to correct the DUS, was also associated with an unsatisfying primary outcome ($p=0.05$).

Interestingly, other symptoms predicted for a poor initial results in UVA such as the prosthesis dysfunction ($p=0.012$) or a delayed intra-orbital placement ($p=0.032$). Indeed, when the orbital implant was not placed at the primary eye management (i.e., evisceration or enucleation), it likely induced a major soft tissue retraction of the anophthalmic cavity then fostering disappointing initial outcomes. For example, in patients displaying a prosthesis dysfunction, 78% of them had a late implant placement in our series (7/9 patients).

Surprisingly, the enucleation was not a bad prognostic factor as the evisceration was ($p=0.022$). Indeed, despite a higher preoperative severity score in the enucleated group compared to the patients who underwent an evisceration (2.31 vs 2.18), the too small number of enucleated patients (13 vs 22 patients) is probably responsible for this surprising difference. In addition, other factors such as a prior radiation therapy were not synonym of partial or even bad results. This observation is also probably due to the small number of irradiated patients in our cohort (5.5%, preoperative severity score: 2.5).

We then investigated which factors were still associated with a poor outcomes despite several surgeries (i.e., 2 or more). Finally, a ptosis following the first surgery was the only symptom that remained challenging to correct ($p=0.005$). Indeed, the ptosis is one the most

common complication occurring in anophthalmic patients (Jung et al., 2012) as initially observed in our cohort (58%). The ptosis being not a prognostic factor at the first correction in our study, it suggests that an initial slight ptosis, that could be partially hidden by the enophthalmos, sometimes worsens or occurs after a DUS correction as previously reported (Kaltreider et al., 2003), (Van Gemert and Leone, 1986) and then needs further corrections. Indeed, this postoperative aggravation after a DUS surgery is described in 15 to 20% of cases according to the series (Crochelet et al., 2012), (Kaltreider et al., 2003) (Van Gemert and Leone, 1986) and highlights the relationship between the intra orbital volume increase and its occurrence (see table III). The ptosis can be from various origins (e.g., LPS injury related to the initial disease or to the enucleation/evisceration surgery (Devoe, 1945)) or even secondary to the intra orbital fat transfer. Indeed, this phenomenon is similarly described in sunken eyes patients who also have a DUS correction with a fat transfer for aesthetical concerns (Li et al., 2015). All these observations explain why the last surgical step for the PESS management in our department generally is the ptosis surgery.

So far, a small number of studies have investigated the factors predicting for the success of the PESS surgery. Consequently, it is relevant to identify the most complex symptoms to correct to better inform the patient on the surgery that generally requires a multi-step management (78% in our cohort) as for the DUS or the blepharoptosis. However at the end, PESS surgery gives satisfying outcomes in terms of cosmetical results in the majority of cases (94% of cases in our series).

This work displayed the inherent limitations of a monocentric retrospective study (e.g., data collection, moderate cohort size and single team's experience) and it should be interesting to validate our observations through a larger multicentric and prospective study.

Conclusion

The management of a PESS involves the correction of both the orbital cavity and the soft tissues. The preoperative deep upper lid sulcus remains the main symptom associated with a poor outcome after a first surgery in patients with an intra-orbital implant. Then, the other challenging sequela to correct is the ptosis than can worsens after a DUS correction. Basically, the patient should be informed that the final surgical results remain satisfying in majority of cases at the expense of several surgeries.

References

- Bajaj, M.S., Pushker, N., Singh, K.K., Chandra, M., Ghose, S., 2006. Evaluation of Amniotic Membrane Grafting in the Reconstruction of Contracted Socket: Ophthalmic Plastic & Reconstructive Surgery 22, 116–120. <https://doi.org/10.1097/01.iop.0000200887.26015.d4>
- Bello, V.M., Levine, M.R., 1980. Superior Sulcus Deformity. Archives of Ophthalmology 98, 2215–2216. <https://doi.org/10.1001/archopht.1980.01020041067014>
- Choi, B., Lee, S., Chung, W., 2005. Correction of Superior Sulcus Deformity and Enophthalmos with Porous High-density Polyethylene Sheet in Anophthalmic Patients. Korean Journal of Ophthalmology 19, 168. <https://doi.org/10.3341/kjo.2005.19.3.168>
- Collin JRO., 2006. Enucleation, evisceration and socket surgery. pp. 223-228.
- Crochelet, O., Maalouf, T., Duron, S., Froussart, F., Rigal-Sastourné, J.-C., George, J.-L., 2012. Efficacité et tolérance des injections d'acide hyaluronique hautement réticulé dans la prise en charge des énoptalmies. Journal Français d'Ophtalmologie 35, 441.e1-441.e7. <https://doi.org/10.1016/j.jfo.2012.04.005>
- Devoe, A.G., 1945. Experiences with the Surgery of the Anophthalmic Orbit. American Journal of Ophthalmology 28, 1346–1351. [https://doi.org/10.1016/0002-9394\(45\)91069-5](https://doi.org/10.1016/0002-9394(45)91069-5)
- Gotzamanis, A., Ducasse, A., Brugniart, C., Sayag, D., 2001. La greffe dermo-graisseuse. J. Fr. Ophtalmol. 24, 6.
- Jung, S.-K., Cho, W.-K., Paik, J.-S., Yang, S.-W., 2012. Long-term surgical outcomes of porous polyethylene orbital implants: a review of 314 cases. British Journal of Ophthalmology 96, 494–498. <https://doi.org/10.1136/bjophthalmol-2011-300132>
- Kaltreider, S.A., 2000. The Ideal Ocular Prosthesis: Analysis of Prosthetic Volume. Ophthalmic Plastic and Reconstructive Surgery 16, 388–392. <https://doi.org/10.1097/00002341-200009000-00013>
- Kaltreider, S.A., Lucarelli, M.J., 2002. A Simple Algorithm for Selection of Implant Size for Enucleation and Evisceration: A Prospective Study. Ophthalmic Plastic & Reconstructive Surgery 18, 336–341. <https://doi.org/10.1097/00002341-200209000-00004>
- Kaltreider, S.A., Shields, M.D., Hippeard, S.C., Patrie, J., 2003. Anophthalmic Ptosis: Investigation of the Mechanisms and Statistical Analysis: Ophthalmic Plastic & Reconstructive Surgery 19, 421–428. <https://doi.org/10.1097/01.IOP.0000092799.82563.D7>
- Keilani, C., Baus, A., Tick, S., Sahel, J.-A., Boumendil, J., 2019. Effectiveness and safety comparison of three eye and orbital reconstruction techniques in facial plastic surgery. Annales de Chirurgie Plastique Esthétique 64, 351–361. <https://doi.org/10.1016/j.anplas.2019.01.003>
- Kuzmanović Elabjer, B., Bušić, M., Bosnar, D., Elabjer, E., Miletić, D., 2010. Our Experience With Dermofat Graft in Reconstruction of Anophthalmic Socket. Orbit 29, 209–212. <https://doi.org/10.3109/01676830.2010.485716>

- Leyngold, I.M., Berbos, Z.J., McCann, J.D., Pariseau, B., Leyngold, A.R., Anderson, R.L., 2014. Use of Hyaluronic Acid Gel in the Treatment of Lagophthalmos in Sunken Superior Sulcus Syndrome. *Ophthalmic Plastic & Reconstructive Surgery* 30, 175–179. <https://doi.org/10.1097/IOP.0000000000000040>
- Li, X.-Q., Wang, T.-L., Wang, J.-Q., 2015. Ptosis: An Underestimated Complication after Autologous Fat Injection into the Upper Eyelid. *Aesthet Surg J* 35, NP147–NP153. <https://doi.org/10.1093/asj/sjv015>
- Liu, C., Kai Liu, D.Z., 2012. One stage correction of sunken eyes combined with ptosis.
- Malet, T., 2000. Reinjection of autologous fat in moderately deep upper lid sulci of anophthalmic sockets. *Orbit* 19, 239–251. <https://doi.org/10.1076/orbi.19.4.239.2655>
- Paik, J.-S., Park, H.-Y., Cho, W.-K., Yang, S.-W., 2012. Effects of Secondary Porous Orbital Implantation in Anophthalmic Sockets: *Journal of Craniofacial Surgery* 23, 1677–1682. <https://doi.org/10.1097/SCS.0b013e318266fb7c>
- Pearl, R., 1985. Acquired ptosis: a reexamination of etiology and treatment. *Plastic and reconstructive surgery* 76.
- Pfeiffer, R., 1987. Traumatic enophthalmos. *Advances in ophthalmic plastic and reconstructive surgery* 6.
- Ranno, S., Serafino, M., Nucci, P., 2020. Four petal evisceration versus standard technique: A retrospective study. *European Journal of Ophthalmology* 112067212095016. <https://doi.org/10.1177/1120672120950160>
- Sales-Sanz, M., Sanz-Lopez, A., 2007. Four-Petal Evisceration: A New Technique: *Ophthalmic Plastic & Reconstructive Surgery* 23, 389–392. <https://doi.org/10.1097/IOP.0b013e318142cc4c>
- Vagefi, M.R., McMullan, T.F.W., Burroughs, J.R., White, G.L., McCann, J.D., Anderson, R.L., 2007. Injectable Calcium Hydroxylapatite for Orbital Volume Augmentation. *Archives of Facial Plastic Surgery* 9, 439–442. <https://doi.org/10.1001/archfaci.9.6.439>
- Van Gemert, J.V., Leone, C.R., 1986. Correction of a Deep Superior Sulcus With Dermis-Fat Implantation. *Archives of Ophthalmology* 104, 604–607. <https://doi.org/10.1001/archophth.1986.01050160160034>
- Vistnes, L.M., 1976. Mechanism of upper lid ptosis in the anophthalmic orbit. *Plast. Reconstr. Surg.* 58, 539–545. <https://doi.org/10.1097/00006534-197611000-00002>
- Yousuf, S.J., Jones, L.S., Kidwell, E.D., 2012. Enucleation and Evisceration: 20 Years of Experience. *Orbit* 31, 211–215. <https://doi.org/10.3109/01676830.2011.639477>

Vu, le Directeur de Thèse

Dr Arnaud Paré, PHU
Chirurgie Maxillo-Faciale et Reconstructrice de la Face
C.H.R.U. Trousseau
37044 TOURS CEDEX 09
Tél: 02 34 37 89 54
N°RPPS: 10100836922

Vu, le Doyen
De la Faculté de Médecine de Tours
Tours, le

CALLUAUD Gauthier

34 pages – 5 tableaux – 2 figures

Résumé :

Le syndrome de l'orbite énucléée (SOE) est une séquelle difficile à corriger chez les patients anophtalmes qui nécessite souvent plusieurs interventions chirurgicales. Le but de cette étude rétrospective monocentrique était de rapporter notre expérience sur la prise en charge du SOE ainsi que les facteurs prédictifs d'une prise en charge en plusieurs étapes. Tous les patients traités chirurgicalement pour un SOE entre 2006 et 2020 au centre hospitalier universitaire de Tours (France) ont été inclus. Les données démographiques et médicales pré et postopératoires ont été recueillies. La chirurgie a été considérée comme réussie lorsqu'aucun symptôme clinique de SOE n'a été observé. Trente-six patients ont été inclus, 22,2% d'entre eux ont vu leur SOE corrigé après la première chirurgie. Dans l'analyse multivariée (MVA), le symptôme du creux sus palpébral est resté le principal facteur significatif associé à une correction incomplète après la première chirurgie (OR 45,5, IC 95% (3,481-594,6), $p=0,004$). Pour les corrections ultérieures, le ptosis était le seul facteur pronostique significatif nécessitant plusieurs interventions chirurgicales ($p=0,005$). A la fin de la prise en charge, 94,4% des patients ont eu des résultats satisfaisants. La prise en charge d'un SOE implique la correction à la fois de la cavité orbitaire et des tissus mous. Bien que sa correction soit complexe et prenne du temps dans la majorité des cas, les patients doivent être informés que les résultats cosmétiques finaux restent bons au prix de plusieurs interventions chirurgicales.

Mots clés : Syndrome de l'orbite, reconstruction de l'orbite anophtalme, syndrome de l'orbite post-énucléation, syndrome de l'orbite restreinte, chirurgie d'énucléation, étude pronostique.

Jury :

Président du Jury : Professeur Boris LAURE

Directeur de thèse : Docteur Arnaud PARE

Membres du Jury : Professeur Pierre-Jean PISELLA
Professeur Emmanuel LESCANNE

Date de soutenance : 01 juin 2021