EYELID RETRACTOR

FIELD OF TECHNOLOGY

[0001] The present invention pertains to the technical field of ophthalmic medical auxiliary devices, and more specifically, relates to an eyelid retractor.

BACKGROUND

[0002] Currently, eyelid retraction is a fundamental and critical procedure in ophthalmic clinical diagnosis and treatment—whether for fundus examinations requiring full exposure of the ocular surface, or for surgeries such as cataract and glaucoma that require the eyelids to be stably opened and closed, all rely on the assistance of an eyelid retractor.

[0003] Chinese Patent Publication No. CN208892664U discloses a novel eyelid retractor that is convenient to use and suitable for surgical procedures, comprising a support frame, eyelid-opening arms, eyelid-opening screws, a retraction frame, and a lighting assembly. The eyelid-opening arms and eyelid-opening screws are both mounted on the support frame, the retraction frame is installed on the eyelid-opening screw and connected to the eyelid-opening arm, and the lighting assembly is mounted on the eyelid-opening screw and the retraction frame. The eyelid retractor of this invention features a simple structure, scientific design, and convenient operation. By adding an illumination device at the bottom of the traditional eyelid retractor, the impact of shadows cast by the retractor itself on the surgical process is reduced, significantly lowering surgical risks and improving the success rate.

[0004] Although the aforementioned patent enables stable eyelid retraction during surgery, most existing eyelid retractors adopt an "integrated support frame + fixed-spacing clamp" structure, which only allows synchronous adjustment of the upper and lower or left and right clamps via a single adjustment knob. This design cannot be customized to fit individual patient eye shapes, such as palpebral fissure length, eyelid thickness, or ocular condition: for example, children have short palpebral fissures and elderly patients have lax eyelids, so a fixed-spacing retractor may result in insufficient retraction or excessive compression, causing eyelid skin folds and impaired blood circulation.

[0005] Meanwhile, bolt-type retractors require manual rotation to adjust the force, relying on the physician's experience and judgment. Excessive rotation may lead to eyelid traction and deformation, and especially during lengthy procedures, sustained compression can cause eyelid edema, affecting postoperative recovery. Handheld retractors, which require one hand for retraction and the other for clinical operations, cannot be fixed to the operating table or other surfaces, making flexible installation according to different postures impossible. Sweaty hands may cause slippage and displacement of the retractor, compromising surgical precision.

SUMMARY

[0006] To address the deficiencies of the prior art, the present invention provides an eyelid retractor, to solve the problems raised in the background art above.

[0007] To achieve the above objective, the present invention adopts the following technical solution: An eyelid retractor, comprising an adjustment bracket, wherein one side of the top of the adjustment bracket is provided with a steering knuckle, the adjustment bracket is threadedly connected to the steering knuckle via a threaded knob, the steering knuckle is equipped with a spacing adjustment assembly, the spacing adjustment assembly is fitted with an adjustment seat, the adjustment seat is cylindrical, the center of the adjustment seat is provided with an annular slot, a spring member is sleeved within the annular slot, the upper and lower support portions of the spring member are each fixedly connected to an adapter block, the adapter blocks are symmetrically distributed above and below, one end of each adapter block is provided with an adjustment slide rod, the adjustment slide rod is slidably fitted within the adapter block, an eyelid-opening head is fixed on the adjustment slide rod, the eyelid-opening heads are symmetrically arranged, a first limit knob and a second limit knob are respectively provided on both sides of the spring member, the outer circumferential surface of the adjustment seat is provided with symmetrical threaded surfaces, the first limit knob and the second limit knob are threadedly engaged with the adjustment seat, a first limit post is provided on one side of the first limit knob, the first limit post presses the lower support portion of the spring member, a second limit post is provided on the inner side of the second limit knob, and the second limit post presses the upper support portion of the spring member.

[0008] As an optional embodiment of the invention, the bottom of the adjustment bracket is threadedly connected to an adjustment screw, the bottom of the adjustment screw is fixed to a clamping plate via a bearing, and the top end of the adjustment screw is fitted with a rotary handle.

[0009] As an optional embodiment of the invention, the spacing adjustment assembly comprises guide rods symmetrically fixed to the steering knuckle, the guide rods are slidably fitted within guide holes of the adjustment seat, a threaded adjustment stud is installed inside the adjustment seat, one end of the adjustment stud is fixed within the steering knuckle via a bearing, and the other end of the adjustment stud is provided with an adjustment knob.

[0010] As an optional embodiment of the invention, the cross-section of the eyelid-opening head is hook-shaped, the eyelid-opening head is provided with an elongated oval vent hole, and the eyelid-opening head is made of medical-grade silicone.

[0011] As an optional embodiment of the invention, one side of the adapter block is provided with a support disc, and the support disc is provided with an annular groove.

[0012] As an optional embodiment of the invention, the upper and lower support portions of the spring member are each sleeved with an anti-slip rubber sleeve, and the anti-slip rubber sleeves are frictionally pressed by the first limit post and the second limit post, respectively.

[0013] The present invention provides an eyelid retractor with the following beneficial effects:

[0014] Multi-scenario clamping and fixation are achieved via the adjustment screw and clamping plate, and the steering knuckle allows angle adjustment. The adjustment knob rotates the adjustment stud, thereby driving the adjustment seat to adjust the spacing. In combination with the extension length adjustment of the adjustment slide rod, the device can be adapted to different eye shapes, postures, and clinical requirements. The first and second limit knobs independently control the upper and lower eyelid retraction angles, preventing pain caused by synchronous expansion.

[0015] The eyelid-opening head is made of soft medical-grade silicone, providing good conformity with ocular tissues and reducing compression injury. The elongated oval vent holes ensure breathability of the ocular surface and prevent dryness. The annular groove of the support disc enhances grip stability. All adjustment components can be operated independently, allowing for fine-tuning of position and force without disassembly, thereby shortening operation time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a structural schematic diagram of the present invention;

[0017] FIG. 2 is a front view of the present invention;

[0018] FIG. 3 is a top view of the present invention;

[0019] FIG. 4 is an A-A sectional view of the present invention;

[0020] FIG. 5 is a C-C sectional view of the present invention.

[0021] In the drawings: 1, adjustment bracket; 2, adjustment screw; 201, clamping plate; 202, rotary handle; 3, threaded knob; 4, steering knuckle; 401, guide rod; 5, adjustment stud; 501, adjustment knob; 6, adjustment seat; 7, first limit knob; 701, first limit post; 8, second limit knob; 801, second limit post; 9, spring member; 901, anti-slip rubber sleeve; 10, adapter block; 11, support disc; 12, adjustment slide rod; 13, eyelid-opening head; 131, vent hole.

DESCRIPTION OF THE EMBODIMENTS

[0022] The following provides a more detailed description of the embodiments of the present invention with reference to the accompanying drawings and examples. The following embodiments are intended to illustrate the present invention and should not be construed as limiting its scope.

[0023] Please refer to Figures 1 to 5. The present invention provides a technical solution: An eyelid retractor, comprising an adjustment bracket 1, with the bottom of the adjustment bracket 1 threadedly connected to an adjustment screw 2, the bottom of the adjustment screw 2 fixed to a clamping plate 201 via a bearing, and the top end of the adjustment screw 2 fitted with a rotary handle 202. The adjustment screw 2 is rotated via the rotary handle 202 to achieve fixation and clamping. One side of the top of the adjustment bracket 1 is provided with a steering knuckle 4, which is threadedly connected to the adjustment bracket 1 via a threaded knob 3. The steering knuckle 4 is equipped with a spacing adjustment assembly, and the spacing adjustment assembly is fitted with an adjustment seat 6, which is cylindrical.

[0024] As shown in Figures 1 and 4, the spacing adjustment assembly comprises guide rods 401 symmetrically fixed to the steering knuckle 4, the guide rods 401 are slidably fitted within the guide holes of the adjustment seat 6, a threaded adjustment stud 5 is installed inside the adjustment seat 6, one end of the adjustment stud 5 is fixed within the steering knuckle 4 via a bearing, and the other end of the adjustment stud 5 is provided with an adjustment knob 501. The adjustment knob 501 is used to adjust the spacing to the eye, thereby facilitating eyelid retraction.

[0025] The center of the adjustment seat 6 is provided with an annular slot, and a spring member 9 is sleeved within the annular slot. The upper and lower support portions of the spring member 9 are each fixedly connected to an adapter block 10, which are symmetrically distributed above and below. One end of each adapter block 10 is provided with an adjustment slide rod 12, which is slidably fitted within the adapter block 10 and requires external force to adjust. When stationary, it is axially fixed by friction and does not fall off. An eyelid-opening head 13 is fixed on the adjustment slide rod 12, and the eyelid-opening heads 13 are symmetrically arranged. The cross-section of the eyelid-opening head 13 is hook-shaped, and it is provided with an elongated oval vent hole 131, which ensures breathability while limiting movement, allowing air circulation between the ocular surface and the environment during retraction and reducing dryness and stuffiness. The eyelid-opening head 13 is made of medical-grade silicone, which is soft and elastic, providing good conformity with ocular tissues and reducing compression and injury.

[0026] As shown in Figures 1, 3, and 5, one side of the adapter block 10 is provided with a support disc 11, which is fitted with an annular groove. The annular groove increases friction, facilitating stable manual operation. Both sides of the spring member 9 are respectively provided with a first limit knob 7 and a second limit knob 8. The outer circumferential surface of the adjustment seat 6 is provided with symmetrical threaded surfaces, and the first limit knob 7 and the second limit knob 8 are threadedly engaged with the adjustment seat 6. One side of the first limit knob 7 is provided with a first limit post 701, which presses the lower support portion of the spring member 9. The inner side of the second limit knob 8 is provided with a second limit post 801, which presses the upper support portion of the spring member 9.

[0027] The upper and lower support portions of the spring member 9 are each sleeved with an anti-slip rubber sleeve 901, which are frictionally pressed by the first limit post 701 and the second limit post 801, respectively, to enhance limit stability. By independently rotating the first limit knob 7 and the second limit knob 8, the upper and lower support portions of the spring member 9 are independently adjusted, preventing pain caused by synchronous expansion.

[0028] Specific usage and function of this embodiment: During use, the adjustment screw 2 drives the clamping plate 201 to be fixed near the patient's head on the operating table. The threaded knob 3 drives the steering knuckle 4 to rotate for angle adjustment, positioning the device for eyelid surgery. The adjustment knob 501 adjusts the distance of the eyelid-opening head 13 to the eye, and the adjustment slide rod 12 adjusts the horizontal distance of the eyelid-opening head 13 to align it with the eyeball. After positioning, stable operation is achieved via the support disc 11. The hook-shaped eyelid-opening head 13 gently hooks the upper and lower eyelid edges of the patient. Slowly rotating the second limit knob 8 causes the second limit post 801 to press the anti-slip rubber sleeve 901 of the upper support portion of the spring member 9, thereby slowly retracting the upper eyelid with the upper eyelid-opening head 13 until the upper ocular surface is fully exposed. Similarly, rotating the first limit knob 7 adjusts the retraction force for the lower eyelid, preventing discomfort caused by synchronous expansion of both eyelids. During the procedure, observe the patient's response. If pain or tearing occurs, rotate the corresponding limit knob in the opposite direction to reduce the retraction force. After surgery, rotate the first and second limit knobs 8 in the opposite direction to release the support portions of the spring member 9 and remove the eyelid-opening head 13. Rotate the rotary handle 202 to release the fixation of the clamping plate 201 to the operating table, disassemble the device, and perform disinfection.

[0029] Finally, it should be noted: The above embodiments are intended only to illustrate the technical solutions of the present invention and not to limit them. Although the present invention has been described in detail with reference to the foregoing embodiments, those skilled in the art should understand that modifications may still be made to the technical solutions described in the foregoing embodiments, or equivalent substitutions for some technical features may be carried out.

[0030] Such modifications or substitutions do not depart from the spirit and scope of the technical solutions of the present invention.