CURRENT COMMENT AND CASE REPORTS

CURRENT COMMENT is a section in Anesthesiology in which appears invited and unsolicited professional and scientific correspondence, abbreviated reports of interesting cases, material of interest to anesthesiologists reprinted from varied sources, brief descriptions of apparatus and appliances, technical suggestions, and short citations of experiences with drugs and methods in anesthesiology. Contributions are urgently solicited. Editorial discretion is reserved in selecting and preparing those published. The author's name or initials will appear with all items included.

STELLATE GANGLION BLOCK; A SIMPLIFIED TECHNIC

The use of stellate ganglion block in the treatment of the many peripheral nerve and vascular injuries of the upper extremity incurred during World War II has developed rapidly. The employment of stellate ganglion block will be just as important in the treatment of traumatic nerve and vascular injuries sustained in civilian life. A simplified technic that can be universally adopted for blocking the stellate ganglion is a necessity (1, 2).

INDICATIONS FOR STELLATE GANGLION BLOCK

The indications for block of the stellate ganglion are as follows: (1) impaired circulation due to vascular injury; (2) impaired circulation due to long immobilization in plaster; (3) thrombophlebitis of the axillary or brachial veins (3); (4) impaired circulation associated with peripheral nerve injuries; (5) stiff joints associated with peripheral nerve injuries; (6) causalgia, and (7) delayed postoperative wound healing due to impaired circulation.

ARMAMENTARIUM

The tray for carrying out block of the stellate ganglion contains: five sterile towels; sponge forceps; four gauze squares (2 inches by 2 inches); two sterile glasses; an antisepic solution; 1 per cent procaine in normal saline solution; a 10 cc. syringe; one 25 gage needle (2.5 cm.); one 20 gage needle (10 cm.), and sterile gloves.

TECHNIC

The anesthesiologist scrubs, puts on the sterile gloves and prepares the patient's neck in the usual manner. A wide area of the patient's neck is prepared, from the clavicle to the mastoid, and from the mid-line anteriorly as far around the neck posteriorly as can be reached conveniently without rolling the patient on his side.

The patient's head is turned to the side opposite that on which the block is to be performed. In other words, when a left stellate block is to be done, the patient's chin is turned over toward the right shoulder, and vice versa.

The anterior border of the clavicular head of the sternocleidomastoid muscle with the underlying anterior border of the scalenus anticus muscle is palpated. The palpatting finger is advanced toward the vertebral column until the most prominent transverse process of the cervical vertebra is felt. This is the transverse process of the sixth cervical vertebra or Chassagnac's tubercle. This tubercle is usually at the level of the cricoid cartilage.

A wheal is raised at the anterior border of the clavicular head of the sternocleido-mastoid muscle at the level of the transverse process of the sixth cervical vertebra. In order to avoid puncturing the external jugular vein, the wheal is raised either medial or lateral to the vein. The position of the vein varies. The 10 cm. needle with syringe detached is directed through this wheal toward the transverse process of the sixth cervical vertebra. When the point of the needle impinges on the transverse process of this vertebra, the 10 cc. syringe filled with the procaine solution is attached to the needle. After aspirating in two planes, if no blood or spinal fluid is aspirated, 5 cc. of the procaine solution is injected. The needle is then withdrawn.
and redirected distally until the point impinges on the transverse process of the seventh cervical vertebra. After aspiration in two planes, if no blood or spinal fluid is encountered, 5 cc. of procaine solution is again injected. Horner's syndrome is usually noted within one or two minutes.

**Analysis of Results**

Of the 74 patients who received sympathetic nerve blocks because of stiff joints, 44 obtained objective improvement and 21 obtained subjective improvement in joint mobility. Nine showed no improvement. Forty-nine patients received block therapy because of causalgia in the arm or hand. Five of these had objective improvement and 35 had subjective relief of pain either temporary or permanent. Nine showed no improvement. Fifty-six patients had circulatory disturbances. Thirty of these showed objective improvement and 18 thought that the blocks had improved their condition. Eight were unchanged following block therapy. Four patients were given stellate blocks for poor postoperative healing. In all of these cases healing took place after block therapy.

**Report of Cases**

**Case 1.**—Patient, aged 20 years, received a penetrating gunshot wound of the right anterior neck on August 17, 1945, which produced a right brachial palsy. Following this injury there was severe, persistent pain in right forearm, palm of hand and tips of fingers. Stellate blocks were done on September 20, 21, and 24, 1945. There was com-
plete relief of pain in the forearm and marked reduction of pain in the palm and fingertips. The patient was observed for two weeks and the relief persisted, with only occasional hyperesthesia of the palm and tips of the fingers.

Case 2.—A patient, aged 21 years, was injured February 23, 1945, and two days later his right hand was amputated just distal to the wrist joint. On May 7, 1945, disarticulation was done at the right wrist. Following this procedure the operative wound site failed to heal. Stellate blocks were done July 26, August 3 and 13, 1945. The wound was completely healed four days following the last block.

Case 3.—A patient, aged 40 years, sustained a perforating gunshot wound in the middle third of the right arm on March 26, 1945, producing paralysis of the right median nerve and a fracture of the right humerus. When he was seen by members of the anesthesia service on June 29, 1945, there was edema (2+) of the right hand, moderate causalgia, and marked immobility of the joints of the hand. Stellate blocks were done June 29, July 6, 9, 13, 19, August 3, 6, and 15, 1945. Physiotherapy, which was used prior to block therapy but was ineffectual, was continued during the series of blocks. There was complete relief of the causalgia and edema, and a marked increase in motion of the joints of the hand.

Case 4.—A patient, aged 35 years, sustained a perforating wound of the left upper arm on October 13, 1944, injuring the left brachial artery. Ischemic necrosis of the left hand necessitated amputation of the hand through the metacarpal bones on November 29, 1944. Reamputation of the left forearm was done on May 31, 1945. The operative site was resistant to healing following this

![Image of needle piercing the site of injection](http://anesthesiology.pubs.asahq.org/pdfaccess.ashx?url=/data/journals/jasa/931730/)  
**Fig. 2.** Lateral view of the needle piercing the site of injection while the point of the needle is impinging on the transverse process of the sixth cervical vertebra.
Fig. 3. Anterior view of the needle piercing the site of injection while the point of the needle impinges on the transverse process of the sixth cervical vertebra.

**TABLE**

**Blocks Performed**

<table>
<thead>
<tr>
<th></th>
<th>Stiff Joints</th>
<th>Causalgia</th>
<th>Circulatory Deficiency (cyanosis, edema, moisture, coldness, etc.)</th>
<th>Inadequate Healing (postop.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brachial plexus paralysis</td>
<td>6</td>
<td>15</td>
<td>9</td>
<td></td>
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<tr>
<td>Median, radial, ulnar nerve paralysis</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
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<tr>
<td>Median, ulnar nerve paralysis</td>
<td>12</td>
<td>4</td>
<td>7</td>
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<td>Median, radial nerve paralysis</td>
<td>2</td>
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<td>3</td>
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<tr>
<td>Radial, ulnar nerve paralysis</td>
<td>3</td>
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<td>2</td>
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<tr>
<td>Median nerve paralysis</td>
<td>16</td>
<td>12</td>
<td>10</td>
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<tr>
<td>Radial nerve paralysis</td>
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<td>11</td>
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<tr>
<td>Ulnar nerve paralysis</td>
<td>12</td>
<td>3</td>
<td>4</td>
<td></td>
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<tr>
<td>Amputation</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Fracture (arm and forearm)</td>
<td>7</td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>74</strong></td>
<td><strong>49</strong></td>
<td><strong>46</strong></td>
<td><strong>4</strong></td>
</tr>
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</table>
procedure. Stellate blocks were done on June 21 and 26, and on August 21, 1945, following which the stump healed completely.

COMPLICATIONS

There have been no serious complications. Infrequently, the needle has punctured one of the vertebral vessels and blood has been aspirated. In those few instances the direction of the needle was changed and aspiration in two planes again performed before the procaine was injected.

CONCLUSIONS

Stellate ganglion block is of increasing value to the anesthesiologist. A simple method of obtaining a successful stellate block has been described. Results of this form of therapy have been analyzed.

REFERENCES


Leo J. Fitzpatrick, M.D.,
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